Texas Board of Water Engineers
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CHEMICAL COMPOSITION OF TEXAS SURFACE WATERS, 1954

Prepared in cooperation with the
United States Department of the Interior, Geological Survey
and other agencies, under the direction of
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Geological Survey

December 1956

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CHEMICAL COMPOSITION OF TEXAS SURFACE WATERS, 1954

Introduction

This report makes available to the public data on the chemical quality of the surface waters of Texas in the water year 1954. The results of chemical analyses of water obtained daily from selected points throughout the State and also the results for a number of miscellaneous samples obtained at various points during the period October 1, 1953 to September 30, 1954, are presented.

All natural waters contain dissolved mineral matter. Water in contact with rocks and soils, even for only short periods of time, will dissolve some of the mineral and organic substances. The chemical character of stream waters is dependent on several factors, such as type of soil and rock with which the water is in contact, length of time of the contact, and climatic conditions. In Texas, the variation in chemical composition of different stream waters and, often, at different points on a particular stream is quite wide.

The records of chemical analysis for surface waters given in this volume serve as a basis for determining the suitability of the waters examined for industrial, agricultural, and domestic uses insofar as such use is affected by the dissolved mineral matter in the waters.

Cooperation

This is the tenth in a series of reports covering surface waters of Texas prepared by the U. S. Geological Survey in cooperation with the Texas Board of Water Engineers. These reports may be obtained by writing the Board of Water Engineers, Austin, Texas.

Cooperating in the collection of chemical quality data were the cities of Abilene, Amarillo, Fort Worth, Midland, and Wichita Falls, the Colorado River Municipal Water District, the Canadian River Water Users Association, the Lower Colorado River Authority, the Lower Neches River Authority, the San Jacinto Conservation and Reclamation District, the Brazos River Authority, the Sabine River Authority, the Red Bluff Water Power Control District, the Chambers-Liberty Counties Navigation District, the Pecos River Commission, the Interstate Compact Commissioner of Texas, and the U. S. Corps of Engineers.

Collection and Analysis of Samples

The samples for which data are given were collected from October 1, 1953, to September 30, 1954. Descriptive statements are given for each sampling station for which regular series of chemical analyses have been made. These statements give the location of the stream sampling station, drainage area, length of time for which records are available, extremes of dissolved solids, hardness and water temperature, and other pertinent data. Records of discharge of the streams at, or near, the sampling point for the sampling period are included in most tables of analyses.

During the period October 1, 1953 to September 30, 1954, samples were collected daily at 31 points on Texas streams and twice weekly at 4 sampling points in Trinity Bay near the mouth of the Trinity River. In addition to the chemical-quality data published in this report, temperature data for 24 of the 31 sampling stations and sediment data for 1 of the sampling stations are available in the files of the U. S. Geological Survey, Austin, Texas. Records of chemical quality at 45 additional sampling points for varying lengths of time have been published in previous reports of this series. The location of the active and inactive stations are shown on the accompanying map, and the periods of operation of all the stations are shown on the bar graph.

Daily water samples were usually obtained at or near a Geological Survey gaging station. At several of the sampling stations, samples were collected at frequent intervals throughout the day when there was a rapid change in stage of the stream and mineral concentration of the water. Specific conductance was determined on all samples. Composite samples were usually made for 10-day periods using equal volumes of successive samples having similar conductances. At times, where samples obtained during one day showed a wide variation in specific conductance, composites were made by subdividing the day into intervals of similar conductance.

Expression of Results

All data in the accompanying tables are reported in parts per million except those for mean discharge, tons per acre-foot, tons per day, percent sodium, specific conductance, sodium-adsorption ratio, and pH. A part per million is a unit weight of a constituent in a million unit weights of water. Mean discharge is reported in cubic feet per second, which is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second. The dissolved solids are reported in tons per day, tons per acre-foot, and parts per million. Values reported for dissolved solids concentrations less than 1,000 parts per million are residues on evaporation and for concentrations more than 1,000 parts per million are sums of determined constituents unless noted otherwise. In obtaining the sum, the bicarbonate is calculated to carbonate by dividing by 2.03. For those analyses in which a calculated value as sodium is shown for sodium and potassium, this value, in equivalents per million, was used in computing the percent sodium. For those analyses in which sodium is reported separately, the percent sodium represents the equivalent quantity of sodium only. Specific conductance, a measure of a water's ability to conduct an electric current, is reported in micromhos at 25°C. The values for pH are reported on a numerical scale. A water having a pH of 7.0 is considered to be neutral; less than 7.0, increasingly acidic; and greater than 7.0, increasingly alkaline. Sodium and potassium are reported as sodium unless listed separately in the tables. Hardness due to calcium and magnesium and noncarbonate hardness are reported as calcium carbonate ($CaCO_3$).

The methods of analysis were the same as or modifications of those in standard publications for water analysis. 1/

The weighted averages of analyses are reported for those sampling stations for which discharge records are available. The weighted average of analyses represents the approximate composition of water that would be found in a reservoir containing all the water passing a given station during the year, after thorough mixing in the reservoir.

1/ Collins, W. D., Notes on practical water analysis: U. S. Geol. Survey Water-Supply Paper 596-H, pp. 235-261, 1928; American Public Health Association, Standard methods for the examination of water and sewage, 9th ed., 1946; Scott, W. W., Standard methods of chemical analysis, Volume II, 2049-2055, 5th ed., 1939; Theroux, Eldridge, and Mallmann, Laboratory manual for chemical and bacteriological analyses of water and sewage, 3rd ed., 1943.

LOCATION OF QUALITY OF WATER SAMPLING STATIONS

Arkansas River Basin

1. Canadian River near Tascosa
2. Canadian River near Amarillo
3. Canadian River near Borger

Red River Basin

4. Prairie Dog Town Fork Red River near Brice
5. Mulberry Creek near Brice
6. Salt Fork Red River near Wellington
7. Elm Creek near Shamrock
8. Quitaque Creek near Quitaque
9. Pease River near Crowell
10. Little Wichita River near Archer City
11. Little Wichita River near Henrietta
12. Red River near Gainesville
13. Red River at Denison Dam near Denison
14. Sulphur River near Darden

Sabine River Basin

15. Sabine River near Emory
16. Sabine River near Tatum
17. Sabine River at Logansport, La.
18. Sabine River near Ruliff
19. Cow Bayou near Mauriceville

Neches River Basin

20. Neches River near Rockland
21. Neches River at Evadale

Trinity River Basin

22. Clear Fork Trinity River at Fort Worth
23. Trinity River near Oakwood
24. Trinity River at Romayor
25. Trinity River near Moss Bluff
26. Old River near Cove
27. Trinity River at Anahuac
28. Trinity Bay near Anahuac

San Jacinto River Basin

29. San Jacinto River (West Fork) near Humble
30. San Jacinto River near Huffman

Brazos River Basin

31. Double Mountain Fork Brazos River near Rotan
32. Double Mountain Fork Brazos River near Aspermont
33. Salt Fork Brazos River near Peacock
34. Salt Fork Brazos River near Aspermont
35. Clear Fork Brazos River at Nugent
36. Paint Creek near Haskell
37. Clear Fork Brazos River at Fort Griffin
38. Brazos River near South Bend
39. Brazos River at Possum Kingdom Dam near Graford
40. Brazos River near Whitney
41. Leon River near Eastland
42. Lampasas River near Belton
43. Navasota River near Easterly
44. Brazos River at Richmond

LOCATION OF QUALITY OF WATER SAMPLING STATIONS--Continued

Colorado River Basin

45. Colorado River above Bull Creek near Knapp
46. Bull Creek near Ira
47. Bluff Creek near Ira
48. Deep Creek near Dunn
49. Colorado River at Colorado City
50. Morgan Creek near Colorado City
51. Colorado River at Robert Lee
52. Oak Creek near Blackwell
53. Colorado River near San Saba
54. Colorado River at Austin
55. Colorado River at Wharton

Guadalupe River Basin

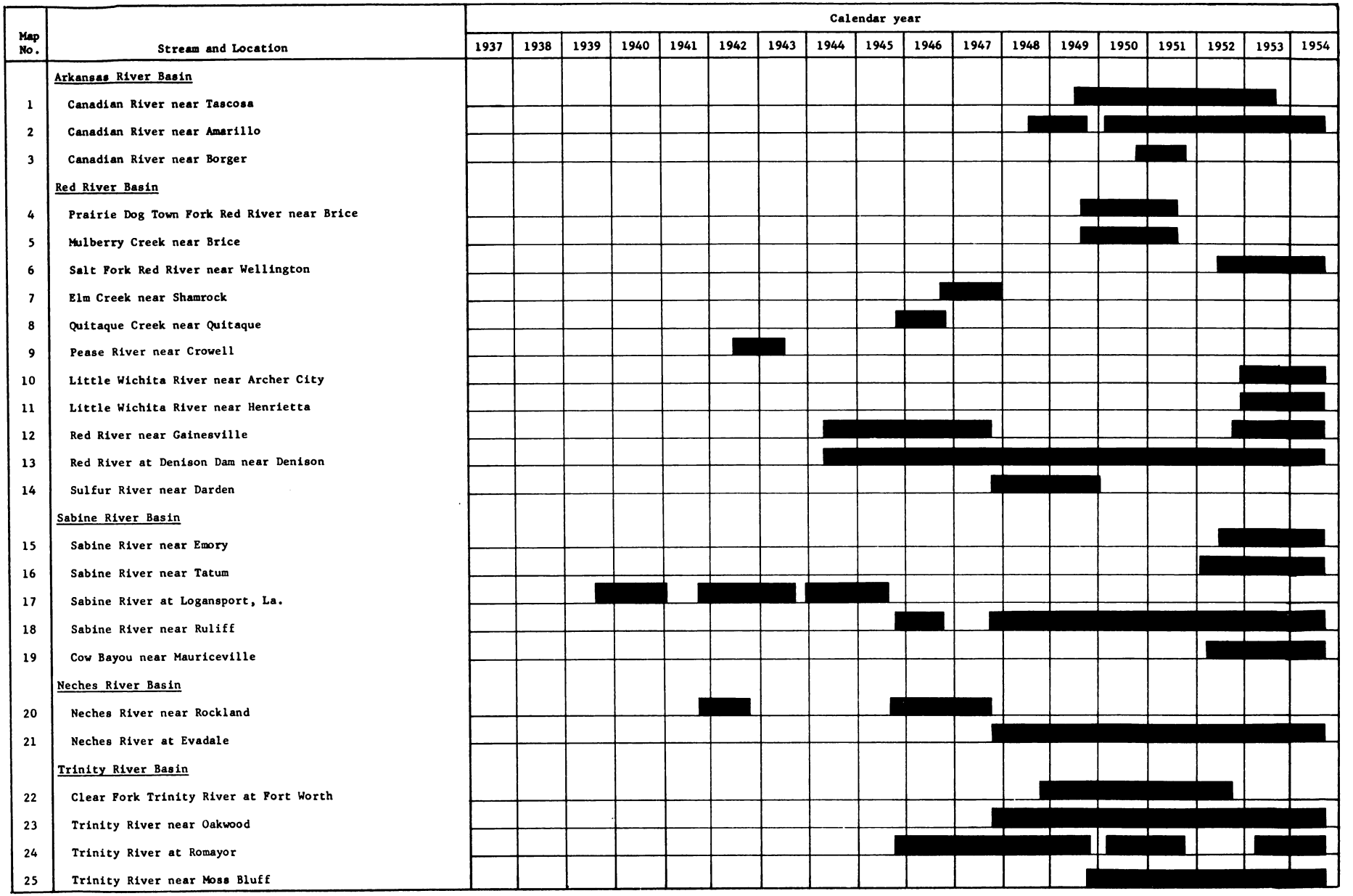
56. Guadalupe River near Spring Branch
57. Guadalupe River at Victoria
58. San Antonio River at Goliad

Nueces River Basin

59. Nueces River at Cotulla
60. Nueces River at Tilden
61. Nueces River near Three Rivers
62. Nueces River near Mathis

Rio Grande Basin

63. Salt (Screwbean) Draw near Orla
64. Pecos River near Orla
65. Pecos River at Pecos
66. Toyah Creek near Pecos
67. Salt Draw near Pecos
68. Toyah Creek below Toyah Lake near Pecos
69. Pecos River below Barstow
70. Pecos River below Grandfalls
71. Pecos River near Girvin
72. Pecos River near Sheffield
73. Rio Grande at Roma
74. Rio Grande at Mission Pumping Plant near Mission
75. Rio Grande near San Benito
76. Rio Grande at Los Fresnos Pumping Plant near Brownsville
77. Rio Grande near Brownsville



PERIODS OF OPERATION OF QUALITY OF WATER SAMPLING STATIONS IN TEXAS

Map No.	Stream and Location	Calendar year																	
		1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Trinity River Basin--Continued																		
26	Old River near Cove																		
27	Trinity River at Anahuac																		
28	Trinity Bay at Mouth of Trinity River near Anahuac																		
	San Jacinto River Basin																		
29	San Jacinto River (West Fork) near Humble																		
30	San Jacinto River near Huffman																		
	Brazos River Basin																		
31	Double Mountain Fork Brazos River near Rotan																		
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35	Clear Fork Brazos River at Nugent																		
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37	Clear Fork Brazos River at Fort Griffin																		
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41	Leon River near Eastland																		
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44	Brazos River at Richmond																		
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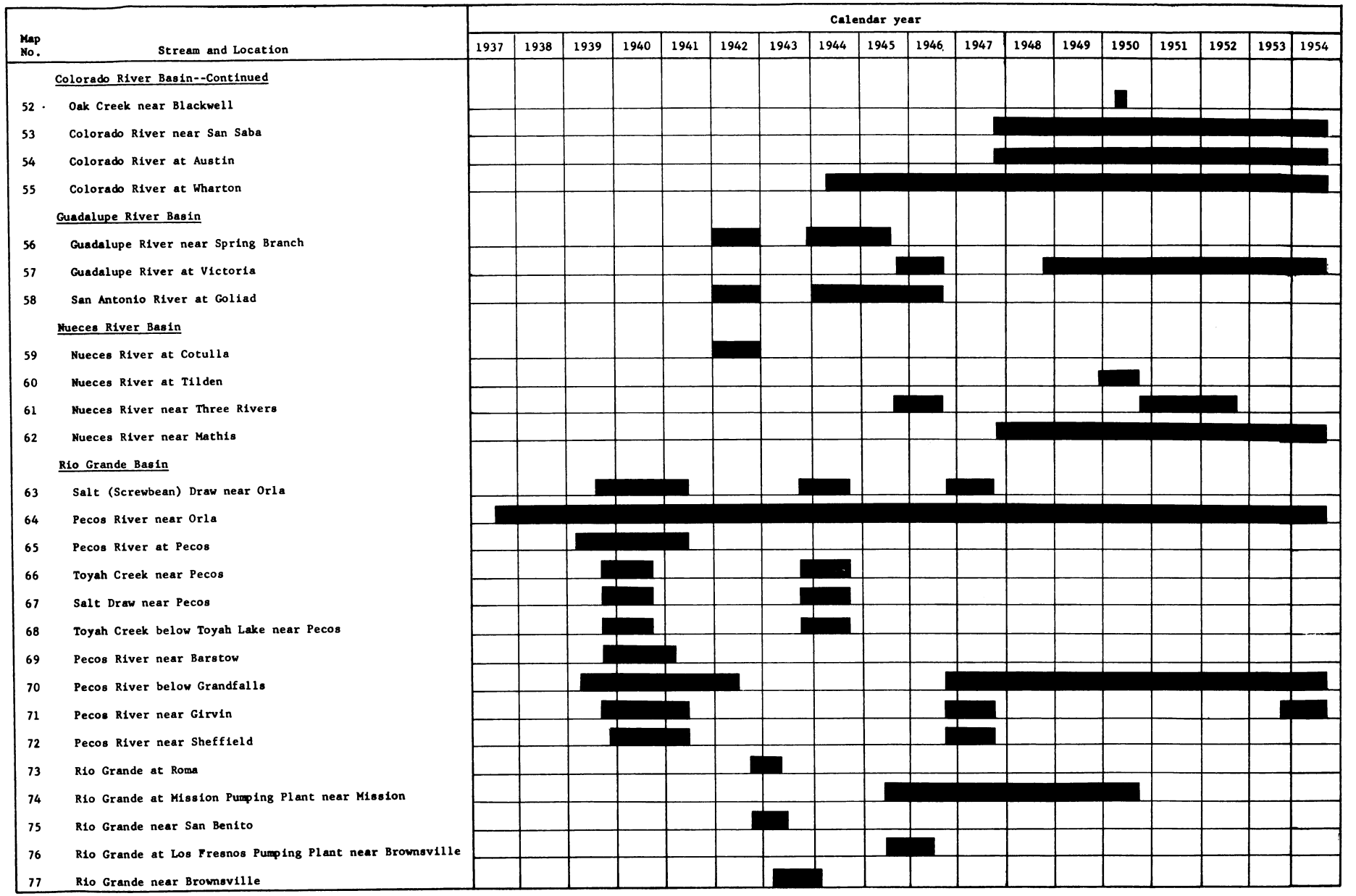
45	Colorado River above Bull Creek near Knapp																		
46	Bull Creek near Ira																		
47	Bluff Creek near Ira																		
48	Deep Creek near Dunn																		
49	Colorado River at Colorado City																		
50	Morgan Creek near Colorado City																		
51	Colorado River at Robert Lee																		

PERIODS OF OPERATION OF QUALITY OF WATER SAMPLING STATIONS IN TEXAS—Continued



PERIODS OF OPERATION OF QUALITY OF WATER SAMPLING STATIONS IN TEXAS—Continued

ARKANSAS RIVER BASIN

CANADIAN RIVER NEAR AMARILLO, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 87 and 287, 2,000 feet downstream from Pitcher Creek, 2.0 miles downstream from Panhandle & Santa Fe Railway bridge, and 19 miles north of Amarillo, Potter County.
DRAINAGE AREA.--19,287 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1948 to October 1949, February 1950 to September 1954.
Water temperatures: August 1949 to September 1954.
Sediment Records: August 1949 to September 1952.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,310 ppm Apr. 12; minimum, 390 ppm May 10-11, 17-18.
Hardness: Maximum, 827 ppm Apr. 12; minimum, 112 ppm Apr. 26-27.
Specific conductance: Maximum daily, 3,390 micromhos Apr. 12; minimum daily, 406 micromhos May 18.
Water temperatures: Maximum observed, 75°F July 26-27; minimum observed, freezing point on many days during winter months.
EXTREMES, 1948-54.--Dissolved solids: Maximum, 2,320 ppm Dec. 25-29, 1952; minimum, 285 ppm Sept. 3, 1952.
Hardness (1950-54): Maximum, 860 ppm Dec. 25-29, 1952; minimum, 90 ppm Aug. 10-12, 1951.
Specific conductance: Maximum daily, 3,980 micromhos Dec. 26, 1952; minimum daily, 406 micromhos May 18, 1954.
Water temperatures (1949-54): Maximum observed, 95°F June 29, 1951; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1341.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1953	11.7	74		60	44	148		315	108	138	5.2	91		856	1.16	27.0	330	72	49	3.5	1,290	7.9
Oct. 11-20	12.0	75		64	46	149		311	112	150	4.8	95		892	1.21	28.9	348	94	48	3.5	1,340	8.0
Oct. 21, 24-31	228	28		48	17	122		196	119	115	1.2	7.2		568	.77	350	190	30	58	3.9	914	8.2
Oct. 22-23	1,042	20		33	13	92		163	83	75	1.2	7.5		414	.56	1,160	136	2	59	3.4	680	8.0
Nov. 1-10	19.6	57		132	54	269		284	330	355	3.2	64		1,400	1.90	74.1	552	319	51	5.0	2,230	7.9
Nov. 11-20	18.0	66		93	49	197		296	219	225	2.8	83		1,080	1.47	52.5	434	191	50	4.1	1,690	8.2
Nov. 21-30	14.2	66		94	47	190		292	213	212	3.2	89		1,060	1.44	40.6	428	188	49	4.0	1,640	8.2
Dec. 1-2, 6, 9	17.5	65		98	47	206		293	234	228	4.0	88		1,110	1.51	52.4	438	198	51	4.3	1,710	8.0
Dec. 3-5, 7-8, 10	19.3	54		144	54	315		268	400	405	2.8	65		1,570	2.14	81.8	582	362	54	5.7	2,450	8.1
Dec. 11-20	19.0	60		121	55	277		289	326	345	2.4	75		1,400	1.90	71.8	528	291	53	5.2	2,190	8.2
Dec. 21-31	16.7	63		128	57	284		306	344	352	2.4	73		1,450	1.97	65.4	554	304	53	5.2	2,280	8.1
Jan. 1-10, 1954	14.4	71		120	54	265		315	309	320	4.4	68		1,370	1.86	53.3	522	264	52	5.1	2,160	7.5
Jan. 11-13, 16-22, 26-31	16.8	65		119	53	282		304	331	345	2.8	51		1,400	1.90	63.5	515	266	54	5.4	2,210	8.2
Jan. 14-15, 23-25	18.8	68		146	59	338		288	418	440	2.8	53		1,670	2.27	84.8	607	371	55	6.0	2,640	7.9
Feb. 1-10	13.4	78		100	51	217		352	249	258	4.8	9.0		1,140	1.55	41.2	459	170	51	4.4	1,870	7.1
Feb. 11-21	11.3	90		70	45	162		344	134	144	4.8	92		a911	1.24	27.8	360	78	49	3.7	1,400	7.3
Feb. 22-28	13.0	86		68	41	146		346	107	131	6.0	74		831	1.13	29.1	338	54	48	3.4	1,310	7.2
Mar. 1-2, 4-5, 9-10, 16, 18	12.9	84		68	43	172		409	111	125	6.4	94		a904	1.23	31.5	346	12	52	4.0	1,350	7.4
Mar. 3, 6-8, 11-15, 17, 19-20	12.5	86		72	45	213		469	112	160	6.4	103		1,030	1.40	34.8	364	0	56	4.8	1,490	7.4
Mar. 21-31	12.2	77		68	43	148		349	111	130	5.0	88		845	1.15	27.8	346	60	48	3.5	1,270	7.7
Apr. 1-10	11.7	65		69	40	152		358	122	153	5.2	22		841	1.14	26.6	336	43	50	3.6	1,360	7.3
Apr. 11, 13-20	15.8	79		67	43	149		414	103	138	5.2	18		846	1.15	36.1	344	5	49	3.5	1,350	7.3
Apr. 12	39	36		221	67	470		151	800	618	1.6	20		2,310	3.14	243	827	704	55	7.1	3,390	8.1
Apr. 21-25, 28-30	30.6	68		64	39	172		321	141	167	4.4	46		880	1.20	72.7	320	57	54	4.2	1,410	7.5
Apr. 26-27	454	40		27	11	120		213	77	81	.8	2.5		465	.63	570	112	0	70	4.9	745	8.2
May 1-9, 12-16	222	66		65	40	151		321	133	146	3.6	47		824	1.12	494	326	64	50	3.6	1,320	7.4
May 10-11, 17-18	2,237	25		36	14	79		166	79	68	.8	5.0		390	.53	2,360	148	12	54	2.8	650	8.0
May 19-24, 30-31	1,090	28		76	32	282		257	263	315	1.2	4.0		1,130	1.54	3,330	321	110	66	6.9	1,890	7.8
May 25-29	790	24		58	23	208		238	182	214	.8	4.6		848	1.15	1,810	239	44	65	5.8	1,420	7.9
June 1-4, 9	21.6	43		112	47	282		249	356	350	1.6	18		1,330	1.81	77.6	473	269	56	5.6	2,120	7.9
June 5-8, 10-20	48.2	53		59	31	122		278	114	122	2.4	19		670	.91	87.2	274	46	49	3.2	1,090	7.3
June 21-30	17.5	87		62	45	125		363	109	120	4.0	26		792	1.08	37.4	340	42	44	3.0	1,200	7.5
July 1-10	250	56		60	34	204		290	181	207	2.4	12		919	1.25	620	290	52	61	5.2	1,470	7.9
July 11-20	9.86	99		60	49	136		379	115	120	4.4	45		838	1.14	22.3	351	40	46	3.2	1,270	7.5
July 21-31	1,513	38		48	26	163		248	146	153	1.6	8.2		730	.99	2,980	227	24	61	4.7	1,180	7.5

CANADIAN RIVER NEAR AMARILLO, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Aug. 1-2, 8-10, 13-18, 20, 1954	60.2	42		76	33	194		228	229	252	1.4	15		1,000	1.36	163	325	138	53	4.7	1,630	7.5
Aug. 3-7, 11-12, 19	56.8	57		112	47	310		278	330	390	2.8	21		1,410	1.92	216	473	245	59	6.2	2,300	7.8
Aug. 21, 25-31	701	22		40	15	161		204	128	146	1.2	4.0		a617	.84	1,170	162	0	68	5.5	1,040	7.9
Aug. 22-24	506	19		36	13	89		165	82	78	1.2	3.5		a403	.55	551	144	8	57	3.2	677	7.9
Sept. 1-3, 12-20	38.5	67		68	41	174		321	140	180	4.4	52		921	1.25	95.7	338	75	53	4.1	1,460	7.0
Sept. 4-11	29.6	62		100	47	242		292	271	290	3.2	37		1,200	1.63	95.9	443	204	54	5.0	1,910	7.4
Sept. 21-29	11.8	79		66	45	145		353	103	142	4.4	70		850	1.16	27.1	350	60	47	3.4	1,320	7.6
Sept. 30	106	20		90	38	424		282	314	525	1.2	.5		1,550	2.11	444	380	150	71	9.5	2,560	8.0
Weighted average	171	36		54	25	170		237	156	171	1.6	12		754	1.03	348	238	44	61	4.8	1,230	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, November 1953

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
BONITA CREEK 17 MILES NORTHEAST OF AMARILLO																						
Nov. 24, 1953---------	2.76	22							11	8.8		1.5									415	
CHICKEN CREEK 18 MILES NORTHEAST OF AMARILLO																						
Nov. 24, 1953---------	2.31	24							9.1	5.0		1.5									386	
COETAS CREEK 20 MILES NORTHEAST OF AMARILLO																						
Nov. 24, 1953---------	1.14	24							14	11		2.5									370	

SALT FORK RED RIVER NEAR WELLINGTON, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 83, 4 miles downstream from Fort Worth & Denver (Burlington) Railroad Bridge, 4½ miles south of Lutie, and 6½ miles north of Wellington, Collingsworth County.
DRAINAGE AREA.--1,222 square miles, of which 209 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: June 1952 to September 1954 (discontinued).
Water temperatures: June 1952 to September 1954 (discontinued).
EXTREMES, 1953-54.--Dissolved solids: Maximum, 3,980 ppm Aug. 12-20; minimum, 677 ppm Oct. 21-24.
Hardness: Maximum, 1,890 ppm Jan. 16; minimum, 362 ppm Aug. 23-24.
Specific conductance: Maximum daily, 5,770 micromhos Aug. 14; minimum daily, 736 micromhos Oct. 22.
Water temperatures: Maximum observed, 74°F Aug. 24; minimum observed, freezing point Nov. 9, Jan. 12-13, 21.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 3,980 ppm Aug. 12-20, 1954; minimum, 677 ppm Oct. 21-24, 1953.
Hardness: Maximum, 1,940 ppm Dec. 18-30, 1952; minimum, 362 ppm Aug. 23-24, 1954.
Specific conductance: Maximum daily, 5,770 micromhos Aug. 14, 1954; minimum daily, 736 micromhos Oct. 22, 1953.
Water temperatures: Maximum observed, 77°F Sept. 30, 1953; minimum observed, freezing point Nov. 9, 1953, Jan. 12-13, 21, 1954.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1341.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-14, 18-20, 1953-	7.46	34		554	93	162		129	1,630	220	0.8	4.0		2,760	3.75	55.6	1,760	1,660	17	1.7	3,170	7.7
Oct. 15-17----------	57.3	24		330	57	98		137	917	140	.5	3.5		1,640	2.23	254	1,060	944	17	1.3	2,100	7.7
Oct. 21-24----------	414	14		127	21	53		131	295	71	.4	3.0		677	.92	757	404	296	22	1.1	960	7.7
Oct. 25-31----------	41.9	25		341	65	148		176	950	215	.7	2.8		1,830	2.49	207	1,120	974	22	1.9	2,470	7.7
Nov. 1-10----------	23.5	28		434	87	179		160	1,260	272	.7	2.5		2,340	3.18	148	1,440	1,310	21	2.1	2,960	7.7
Nov. 11-20----------	15.4	24		482	84	209		169	1,400	285	.7	2.5		2,570	3.50	107	1,550	1,410	23	2.3	3,140	7.7
Nov. 21-30----------	13.7	28		492	99	190		129	1,490	275	--	3.0		2,640	3.59	97.7	1,630	1,530	20	2.0	3,180	7.4
Dec. 1-10----------	21.5	26		424	96	182		133	1,290	280	--	2.5		2,370	3.22	138	1,450	1,340	21	2.1	2,960	7.8
Dec. 11-20----------	15.6	25		502	102	183		151	1,490	278	--	4.0		2,660	3.62	112	1,670	1,550	19	1.9	3,190	7.7
Dec. 21-31----------	25.1	46		398	90	156		155	1,170	252	--	3.0		2,190	2.98	148	1,360	1,240	20	1.8	2,740	7.8
Jan. 1-9, 1954------	22.0	30		410	86	190		104	1,250	282	.7	4.0		2,300	3.13	137	1,380	1,290	23	2.2	2,900	7.8
Jan. 10-15, 17-20------	23.4	30		450	91	187		116	1,360	275	.7	4.0		2,450	3.33	155	1,500	1,400	21	2.1	3,060	7.8
Jan. 16----------	35	28		578	108	152		75	1,780	212	--	5.1		2,900	3.94	274	1,890	1,820	15	1.5	3,390	7.9
Jan. 21-31----------	26.7	53		402	78	200		91	1,240	275	.8	4.2		2,300	3.13	166	1,320	1,250	25	2.4	2,870	7.7
Feb. 1-10----------	18.4	44		410	80	195		95	1,250	278	.8	3.0		2,310	3.14	115	1,350	1,270	24	2.3	2,910	7.7
Feb. 11-19----------	13.4	45		494	89	196		98	1,490	275	.8	4.0		2,640	3.59	95.5	1,600	1,520	21	2.1	3,190	7.7
Feb. 20-28----------	8.54	39		538	94	179		95	1,620	248	.7	4.0		2,770	3.77	63.9	1,730	1,650	18	1.9	3,220	7.7
Mar. 1-10----------	11.7	26		536	99	202		122	1,610	285	.8	3.8		2,820	3.84	89.1	1,740	1,640	20	2.1	3,330	7.6
Mar. 11-20----------	5.42	24		556	98	186		136	1,650	255	.8	4.8		2,840	3.86	41.6	1,790	1,680	18	1.9	3,270	7.6
Mar. 21-31----------	7.10	24		560	95	170		146	1,640	232	.8	3.2		2,800	3.81	53.7	1,790	1,670	17	1.8	3,230	7.7
Apr. 1-10----------	6.04	29		534	99	168		112	1,620	228	.8	3.0		2,740	3.73	44.7	1,740	1,650	17	1.7	3,240	7.7
Apr. 11-20----------	26.5	24		450	94	206		138	1,400	272	.8	3.0		2,520	3.43	180	1,510	1,400	23	2.3	3,090	7.8
Apr. 21-26, 29---------	20.3	25		542	101	148		131	1,590	230	.8	3.0		2,700	3.67	148	1,770	1,660	15	1.5	3,210	7.4
Apr. 27-28, 30, May 1, 7-9----------	192	28		162	44	112		180	454	145	.7	2.5		1,040	1.41	539	585	438	29	2.0	1,570	7.7
May 2-6, 15-16---------	258	28		288	68	164		161	858	230	.7	2.8		1,720	2.34	1,200	998	866	26	2.3	2,340	7.8
May 10-12, 17-19-------	1,135	22		112	26	77		152	277	97	.5	2.8		708	.96	2,170	386	262	30	1.7	1,080	7.9
May 13-14, 20, 24-28---	691	27		161	41	111		160	443	152	.7	3.2		1,020	1.39	1,900	570	439	30	2.0	1,510	8.1
May 21-23, 29-31-------	338	31		286	63	164		142	835	240	.7	2.8		1,690	2.30	1,540	972	856	27	2.3	2,320	7.9
June 1, 14-17----------	172	28		191	43	129		145	520	190	.7	3.2		1,180	1.60	548	654	534	30	2.2	1,740	8.1
June 2-8, 18-20--------	77.9	30		384	81	164		106	1,150	255	.7	3.0		2,120	2.88	446	1,290	1,200	22	2.0	2,730	7.8
June 9-13----------	3,455	22		135	28	74		132	347	99	.7	3.0		803	1.09	7,490	452	344	26	1.5	1,180	8.0
June 21-30----------	33.7	40		358	74	233		112	1,110	320	.9	2.0		2,190	2.98	199	1,200	1,110	30	2.9	2,850	7.7
July 1-10----------	10.4	44		474	107	215		93	1,470	340	.7	2.5		2,670	3.63	75.0	1,620	1,550	22	2.3	3,350	7.7
July 11-20----------	3.91	37		538	113	181		98	1,640	290	.7	3.0		2,850	3.88	30.1	1,810	1,730	18	1.9	3,410	7.7
July 21-31----------	5.62	34		548	105	213		97	1,630	340	.7	4.2		2,920	3.97	44.3	1,800	1,720	20	2.2	3,520	7.7
Aug. 1-7----------	12.9	34		528	96	218		81	1,610	310	.8	4.2		2,840	3.86	989	1,710	1,650	22	2.3	3,370	7.6
Aug. 8-11----------	54.2	30		300	55	156		131	864	215	.6	2.0		1,690	2.30	247	974	867	26	2.2	2,280	7.5
Aug. 12-20----------	6.29	29		518	141	613		114	1,590	1,030	.8	3.5		3,980	5.41	67.6	1,870	1,780	42	6.2	5,470	7.7
Aug. 23-24----------	212	30		107	23	62		134	265	75	.8	3.5		680	.92	389	362	252	27	1.4	942	8.1
Aug. 22, 25-26---------	191	25		218	38	98		122	594	135	.7	3.2		1,170	1.59	603	700	600	23	1.6	1,620	7.7
Aug. 21, 27-31---------	9.35	30		468	86	157		97	1,390	235	.8	3.2		2,420	3.29	61.1	1,520	1,440	18	1.8	2,900	7.6
Sept. 1-10----------	5.23	33		544	94	174		89	1,650	232	.9	2.5		2,770	3.77	39.1	1,740	1,670	18	1.8	3,230	7.5
Sept. 11-20----------	4.00	29		572	94	160		100	1,680	230	.9	2.8		2,820	3.84	30.5	1,810	1,730	16	1.6	3,300	7.8
Sept. 21-30----------	4.36	30		586	97	163		129	1,710	230	.9	3.0		2,880	3.92	33.9	1,860	1,760	16	1.6	3,330	7.4
Weighted average-----	120	25		188	40	102		141	518	141	0.7	3.0		1,100	1.50	357	634	518	26	1.8	1,550	--

LITTLE WICHITA RIVER NEAR ARCHER CITY, TEX.

LOCATION.--At gaging station at bridge on State Highway 79, 1.5 miles downstream from confluence of North and Middle Forks and 4.8 miles north of Archer City, Archer County.
DRAINAGE AREA.--481 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1952 to September 1954.
Water temperatures: December 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,340 ppm Sept. 19; minimum, 137 ppm Oct. 22-27.
Hardness: Maximum, 590 ppm Sept. 19; minimum, 48 ppm Oct. 22-27.
Specific conductance: Maximum daily, 3,730 micromhos Sept. 19; minimum daily, 103 micromhos Oct. 26.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 2,340 ppm Sept. 19, 1954; minimum, 137 ppm Oct. 22-27, 1953.
Hardness: Maximum, 590 ppm Sept. 19, 1954; minimum, 48 ppm Oct. 22-27, 1953.
Specific conductance: Maximum daily, 3,730 micromhos Sept. 19, 1954; minimum daily, 103 micromhos Oct. 26, 1953.
REMARKS.--Values reported for dissolved solids concentrations are residues on evaporation. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1341.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 4-5, 1953	a100	13		30	9.0	108		118	7.6	168	0.6	4.2		399	0.54	107	112	16	68	4.4	742	8.0
Oct. 6-12	3.37	14		19	4.8	48		107	5.9	53	.5	2.8		208	.28	1.89	67	0	61	2.6	359	7.9
Oct. 18	0	--		--	--	--		154	--	59	--	--		--	--	--	90	0	--	--	429	8.2
Oct. 22-27	1,542	10		14	3.1	20		59	3.3	25	.5	4.8		137	.19	570	48	0	48	1.3	192	7.8
Oct. 28-31	61.7	11		37	10	89		75	5.2	181	.6	3.0		403	.55	67.1	134	72	59	3.3	728	7.8
Nov. 1-5, 8-19, 22-23	2.50	13		30	8.0	59		104	6.4	100	.4	3.0		289	.39	1.95	108	23	54	2.5	513	7.9
Nov. 6-7, 20	40.8	9.6		16	6.8	29		88	4.1	37	.4	2.8		168	.23	18.5	68	0	49	1.6	272	7.8
Nov. 21, 24-30	3.85	11		63	16	114		105	17	258	.5	2.5		580	.79	6.03	223	137	53	3.3	1,030	7.9
Dec. 1-17	.66	11		39	9.4	58		135	7.2	100	.4	1.2		316	.43	.56	136	26	48	2.1	559	7.7
Jan. 3, 10, 17, 24, 30, 1954	0	17		50	12	65		187	5.9	109	.5	1.2		357	.49	--	174	22	45	2.1	637	8.0
Feb. 7	0	--		--	--	--		209	--	107	--	--		--	--	--	180	8	--	--	678	--
Feb. 14	0	--		--	--	--		218	--	110	--	--		--	--	--	187	8	--	--	697	--
Feb. 21	0	--		--	--	--		233	--	117	--	--		--	--	--	201	10	--	--	753	8.2
Feb. 28	0	--		--	--	--		245	--	122	--	--		--	--	--	210	10	--	--	772	--
Mar. 7	0	--		--	--	--		230	--	128	--	--		--	--	--	200	12	--	--	768	--
Mar. 14	0	--		--	--	--		280	--	133	--	--		--	--	--	232	2	--	--	837	--
Mar. 21	0	--		--	--	--		291	--	139	--	--		--	--	--	242	2	--	--	875	--
Mar. 28	0	--		--	--	--		300	--	145	--	--		--	--	--	252	6	--	--	921	--
Mar. 31, Apr. 1-5	1.02	12		78	29	243		240	22	438	.5	3.0		1,000	1.36	2.75	314	117	63	5.9	1,760	8.1
Apr. 12 (12 p.m.-6 a.m.) 19-22, 25-29	22.1	14		40	12	113		106	8.2	211	.4	2.0		498	.68	29.7	150	62	62	4.0	869	7.4
Apr. 12 (6 a.m.-12 p.m.) 13 (12 p.m.-6 a.m.), 14, 23, 30	344	10		19	5.1	32		77	4.7	46	.5	3.5		178	.24	344	68	5	50	1.7	292	7.5
Apr. 13 (6 a.m.-12 p.m.) 15-18, 24	114	13		28	8.0	73		95	5.8	124	.5	2.5		323	.44	99.4	103	25	61	3.1	570	8.0
May 1, 12-15, 19-20	595	15		16	4.9	26		69	4.1	36	.7	3.0		165	.22	265	60	4	48	1.4	244	7.7
May 2-10, 11 (12 p.m.-6 p.m.), 16-18	45.2	15		26	7.3	45		104	5.7	69	.6	2.5		234	.32	28.6	95	10	51	2.0	397	8.0
May 11 (6 p.m.-12 p.m.), 24 (12 p.m.-12 m.), 27 (12 m.-12 p.m.), 30-31	180	20		32	9.5	80		91	5.8	147	.5	3.5		376	.51	183	119	44	59	3.2	629	7.5
May 21-23, 24 (12 m.-12 p.m.), 25-26, 27 (12 p.m.-12 m.), 28-29	299	13		21	7.1	37		81	4.7	62	.6	2.5		219	.30	177	82	15	50	1.8	336	7.8
June 1-2, 8 (12 p.m.-8 a.m.), 15 (12 m.-12 p.m.), 16-17	139	16		32	9.0	77		106	6.4	133	.4	3.0		338	.46	127	117	30	59	3.1	618	8.0
June 3-7, 18-25	6.63	17		55	18	163		103	8.6	332	.5	3.0		731	.99	13.1	211	126	63	4.9	1,340	7.5
June 8 (8 a.m.-12 p.m.), 9-14, 15 (12 p.m.-12m.)	168	13		24	6.0	48		104	4.7	68	.5	3.2		222	.30	101	85	0	55	2.3	401	8.2

LITTLE WICHITA RIVER NEAR ARCHER CITY, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
July 4-9	0.88	16		42	12	100		102	5.2	198	0.4	3.5		491	0.67	1.17	154	71	58	3.5	838	7.8
July 11	0	--		--	--	--		116	--	175	--	--		--	--	--	136	41	--	--	710	8.1
July 18	0	--		--	--	--		148	--	161	--	--		--	--	--	153	32	--	--	760	8.2
July 25	0	--		--	--	--		168	--	198	--	--		--	--	--	174	36	--	--	908	8.2
July 31, Aug. 1	12.1	14		--	--	--		99	--	20	.6	5.0		151	.21	4.93	64	0	--	--	242	7.9
Aug. 2-6	2.64	16		--	--	225		115	6.8	458	.4	4.0		970	1.32	6.92	262	168	65	6.1	1,670	7.9
Aug. 3	1.3	--		--	--	--		135	--	460	--	--		--	--	--	256	146	--	--	1,710	8.1
Aug. 8	0	--		--	--	--		133	--	605	--	--		--	--	--	318	209	--	--	2,150	8.0
Aug. 15	0	--		--	--	--		148	--	665	--	--		--	--	--	356	234	--	--	2,340	--
Aug. 22	0	--		--	--	--		138	--	730	--	--		--	--	--	378	265	--	--	2,550	8.2
Aug. 29	0	--		--	--	--		187	--	782	--	--		--	--	--	440	287	--	--	2,750	8.2
Sept. 5	0	--		--	--	--		169	--	880	--	--		1,920	--	--	455	316	--	--	2,990	8.0
Sept. 12	0	--		--	--	--		143	--	950	--	--		--	--	--	515	398	--	--	3,170	8.0
Sept. 19	0	--		--	--	--		165	--	1,130	--	--		2,340	--	--	590	455	--	--	3,730	8.0
Sept. 26	0	--		--	--	--		151	--	1,050	--	--		2,100	--	--	545	422	--	--	3,470	8.0
Weighted average	60.0	12		19	5.1	34		73	4.2	53	0.5	3.7		192	0.26	31.1	68	9	53	1.8	303	--

a No flow Oct. 1-3, 13-21, Dec. 18 to Mar. 30, Apr. 6-11, June 26-30, July 1-3, 10-30, Aug. 7 to Sept. 30.

LITTLE WICHITA RIVER NEAR HENRIETTA, TEX.

LOCATION.--At gaging station at bridge on State Highway 148, 1.5 miles northwest of Henrietta, Clay County, 4 miles upstream from Turkey Creek, and 5 miles upstream from Dry Fork Little Wichita River.
DRAINAGE AREA.--1,037 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1952 to September 1954.
Water temperatures: December 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,310 ppm Oct. 6; minimum, 66 ppm Oct. 22-24, 26-29.
Hardness: Maximum, 305 ppm Nov. 23; minimum, 32 ppm Oct. 22-24, 26-29.
Specific conductance: Maximum daily, 2,460 micromhos Oct. 6; minimum daily, 81.1 micromhos Oct. 24.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 1,700 ppm Mar. 15 (12 m. - 12 p.m.), 16, 1953; minimum, 66 ppm Oct. 22-24, 26-29, 1953.
Hardness: Maximum, 700 ppm May 1, 1953; minimum, 32 ppm Oct. 22-24, 26-29, 1953.
Specific conductance: Maximum daily, 5,910 micromhos May 1, 1953; minimum daily, 81.1 micromhos Oct. 24, 1953.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1341.

Chemical analyses, in parts per million, water year October 1953 to September 1954.

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 2, 1953	0	--		--	--	--		188	--	96	--	--		--	--	--	143	0	--	--	620	--
Oct. 4-5, 7-12	a13.9	13		26	7.4	89		103	6.2	137	0.6	3.0		b333	0.45	12.5	96	11	67	3.9	645	7.7
Oct. 6	185	16		60	18	415		93	14	728	.8	7.5		1,310	1.78	654	224	148	80	12	2,460	7.4
Oct. 19	0	--		--	--	--		114	--	163	--	--		--	--	--	104	10	--	--	720	8.1
Oct. 22-24, 26-29	3,326	7.2		8.2	2.7	11		38	2.6	12	.7	3.0		b66	.09	593	32	0	43	.8	116	7.4
Oct. 25, 30-31	2,993	11		12	4.1	21		51	3.0	30	.8	3.2		149	.20	1,200	47	5	49	1.3	204	7.3
Nov. 1-9	161.6	16		18	5.6	21		83	3.6	27	.7	2.5		151	.21	65.9	68	0	40	1.1	237	7.6
Nov. 10-12, 25-30	6.77	11		30	8.6	62		104	6.3	106	.5	2.2		296	.40	5.41	110	25	55	2.6	537	7.7
Nov. 13-22, 24	15.4	13		42	13	108		94	6.3	217	.4	2.2		484	.66	20.1	158	82	60	3.7	875	7.8
Nov. 23	43	--		--	--	--		84	--	695	--	--		--	--	--	305	236	--	--	2,350	7.9
Dec. 1-2, 5-6, 8-9	18.8	15		31	9.2	59		109	7.0	103	.3	1.8		305	.41	15.5	115	26	53	2.4	531	8.0
Dec. 3-4, 7, 10-17	a4.95	18		18	5.4	22		82	5.4	26	.7	3.2		176	.24	2.35	67	0	41	1.1	238	7.8
Dec. 28-31	0	16		17	5.3	18		86	5.3	17	.7	2.8		171	.23	--	64	0	38	1.0	206	7.6
Jan. 1-2, 4, 6, 1954	0	12		19	4.7	19		88	4.6	18	1.0	3.5		b125	.17	--	67	0	23	1.0	220	7.9
Jan. 8	0	--		--	--	--		94	--	19	--	--		--	--	--	62	0	--	--	219	8.1
Jan. 14	0	--		--	--	--		94	--	20	--	--		--	--	--	62	0	--	--	222	8.1
Jan. 20	0	--		--	--	--		94	--	19	--	--		--	--	--	65	0	--	--	228	8.1
Jan. 25	0	--		--	--	--		95	--	20	--	--		--	--	--	65	0	--	--	224	8.1
Jan. 30	0	--		--	--	--		95	--	21	--	--		--	--	--	65	0	--	--	234	8.0
Feb. 2	0	--		--	--	--		98	--	22	--	--		--	--	--	68	0	--	--	237	7.9
Feb. 10	0	--		--	--	--		106	--	22	--	--		--	--	--	72	0	--	--	255	7.9
Feb. 17	0	--		--	--	--		112	--	26	--	--		--	--	--	78	0	--	--	278	8.1
Feb. 25	0	--		--	--	--		110	--	34	--	--		--	--	--	82	0	--	--	311	7.9
Mar. 5	0	--		--	--	--		124	--	28	--	--		--	--	--	86	0	--	--	303	8.0
Mar. 13	0	--		--	--	--		132	--	29	--	--		--	--	--	92	0	--	--	317	8.0
Mar. 19	0	--		--	--	--		126	--	41	--	--		--	--	--	103	0	--	--	363	7.9
Mar. 24	0	--		--	--	--		140	--	39	--	--		--	--	--	102	0	--	--	360	8.0
Mar. 31	0	--		--	--	--		151	--	35	--	--		--	--	--	104	0	--	--	361	8.1
Apr. 3	0	--		--	--	--		161	--	37	.1	--		--	--	--	112	0	--	--	378	--
Apr. 8	0	--		--	--	--		160	--	45	.1	--		--	--	--	119	0	--	--	410	8.2
Apr. 13-22	a165	12		25	7.8	62		93	5.9	101	.4	3.0		276	.38	123	94	18	59	2.8	497	7.7
Apr. 23-30	238	12		20	6.1	32		79	4.4	50	.6	3.5		189	.26	121	75	10	48	1.6	312	7.8
May 1-2, 5, 11-13, 16-18	1,510	14		12	5.7	15		56	3.3	22	1.0	3.0		b104	.14	452	53	8	37	1.3	169	7.7
May 3-4, 6-10, 14-15	946	18		18	5.1	25		68	4.2	39	.7	3.2		177	.24	424	66	10	45	.9	250	7.8
May 19, 21, 25 (12 p.m.-12 m.), 27, 29-31	528	14		20	5.9	32		81	4.3	49	.7	2.0		193	.26	275	74	8	48	2.9	297	7.8
May 20, 22-24, 26, 28	382	16		26	8.3	66		85	6.0	115	.6	2.5		309	.42	319	99	29	59	2.9	507	7.5
May 25 (12 m -12 p.m.)	452	22		--	--	167		103	9.5	320	--	5.0		754	1.03	920	186	102	66	5.3	1,240	8.0
June 1, 3, 9 (12 m. -12 p.m.), 10-11, 12 (12 p.m. -12 m.)	908	17		20	5.3	37		75	4.5	58	.6	3.0		202	.27	495	72	10	53	1.9	337	7.9
June 2, 8, 9 (12 p.m. - 12 m), 15, 16 (12 p.m. -12 m.)	544	16		14	4.5	19		66	3.7	23	.7	2.5		142	.19	209	53	0	43	1.1	205	7.9

LITTLE WICHITA RIVER NEAR HENRIETTA, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
June 4, 16 (12 m.-12 p.m.), 1954	214	21		78	21	241		97	12	502	0.6	3.0		b927	1.26	536	281	202	65	6.3	1,890	7.9
June 5-7, 17	142	20		46	12	132		97	8.1	255	.6	3.5		575	.78	220	164	85	64	4.5	1,030	7.9
June 12 (12 m. -12 p.m.) 13-14, 18-24	a59.6	19		29	8.0	61		102	5.9	103	.6	1.8		345	.47	55.5	105	22	56	2.6	523	7.9
July 5, 8-9	a30.0	14		13	4.2	22		76	3.5	18	.8	4.0		202	.27	16.4	50	0	49	1.3	200	7.6
July 6-7	30.5	18		--	--	73		124	3.5	128	1.2	2.5		368	.50	30.3	131	30	55	2.8	627	8.0
July 22	0	--		--	--	--		95	--	18	--	--		--	--	--	64	0	--	--	216	8.1
July 29	0	--		--	--	--		104	--	20	--	--		--	--	--	71	0	--	--	240	8.1
Aug. 6	0	--		--	--	--		114	--	20	--	--		--	--	--	74	0	--	--	257	8.2
Aug. 12	0	--		--	--	--		120	--	23	--	--		--	--	--	80	0	--	--	275	8.1
Aug. 19	0	--		--	--	--		132	--	24	--	--		--	--	--	88	0	--	--	291	--
Aug. 26	0	--		--	--	--		139	--	27	--	--		--	--	--	93	0	--	--	312	8.1
Sept. 2	0	--		--	--	--		144	--	27	--	--		--	--	--	97	0	--	--	324	8.2
Sept. 9	0	--		--	--	--		150	--	29	--	--		--	--	--	102	0	--	--	338	8.2
Sept. 18	0	--		--	--	--		160	--	32	--	--		--	--	--	106	0	--	--	362	8.2
Sept. 22	0	--		--	--	--		164	--	34	--	--		--	--	--	111	0	--	--	382	8.2
Weighted average	204	12		14	4.8	25		58	3.6	39	0.7	3.0		147	0.20	81.0	55	7	50	1.5	236	--

a No flow Oct. 1-3, 13-21, Dec. 18 to Apr. 12, June 25 to July 4, July 10 to Sept. 30.

b Sum of determined constituents.

RED RIVER NEAR GAINESVILLE, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 77, a quarter of a mile downstream from Gulf, Colorado, and Santa Fe Railway bridge, 5 miles downstream from Fish Creek, and 7 miles north of Gainesville, Cooke County, and at mile 791.5.
DRAINAGE AREA.--30,782 square miles, of which 5,936 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: May 1944 to April 1946, October 1952 to September 1954.
Water temperatures: October 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 5,210 ppm Aug. 30-31; minimum, 412 ppm May 12-13.
Hardness: Maximum, 1,500 ppm Aug. 30-31; minimum, 155 ppm May 12-13.
Specific conductance: Maximum daily, 8,950 micromhos Aug. 31; minimum daily, 657 micromhos May 12.
Water temperatures: Maximum observed, 95°F July 13; minimum observed, freezing point Dec. 23, Jan. 21.
EXTREMES, 1944-46, 1952-54.--Dissolved solids: Maximum, 6,480 ppm Apr. 11, 1953; minimum, 250 ppm Sept. 30, Oct. 1-3, 1945.
Hardness: Maximum, 1,510 ppm Apr. 11, 1953; minimum, 120 ppm Sept. 30, Oct. 1-3, 1945.
Specific conductance: Maximum daily, 9,890 micromhos Apr. 11, 1953; minimum daily, 325 micromhos Oct. 1, 1945.
Water temperatures, 1952-54: Maximum observed, 95°F July 13, 1954; minimum observed, freezing point Dec. 23, 1953, Jan. 21, 1954.
REMARKS.--Records of specific conductance of daily samples for period May 1944 to April 1946 available in district office at Austin, Tex. Records of specific conductance of daily samples for period October 1952 to September 1954 available in district office at Oklahoma City, Okla. Records of water discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1341.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-6, 1953--------	93.8			294	83	903		126	754	1,450		4.0		3,670	4.99	929	1,080	972	65	12	5,740	7.5
Oct. 7-9----------	3,237			208	35	447		122	514	685		5.1		2,020	2.75	17,650	663	563	59	7.5	3,250	7.4
Oct. 10----------	2,000			140	26	332		106	337	500		5.7		1,450	1.97	7,830	456	370	61	6.8	2,380	7.7
Oct. 11-12----------	1,200			145	25	316		91	362	485		2.0		1,450	1.97	4,700	465	390	60	6.4	2,390	7.5
Oct. 13-14----------	667			177	29	354		107	426	545		2.2		1,660	2.26	2,990	560	473	58	6.5	2,650	7.6
Oct. 15----------	446			202	37	453		111	469	735		2.9		2,010	2.73	2,420	656	565	60	7.7	3,220	7.9
Oct. 16-18----------	415			243	43	639		121	572	1,020		2.0		2,660	3.62	2,980	784	684	64	9.9	4,290	7.8
Oct. 19----------	6,380			312	46	765		112	803	1,170		7.0		3,240	4.41	55,810	968	876	63	11	4,990	7.5
Oct. 20----------	4,820			237	36	627		96	615	960		5.7		2,610	3.55	33,970	740	661	65	10	4,130	7.5
Oct. 21-24----------	2,635			198	31	503		101	507	770		3.6		2,140	2.91	15,230	622	538	64	8.8	3,460	7.7
Oct. 25-26----------	39,700			98	16	196		114	212	302		3.5		933	1.27	100,000	310	217	58	4.8	1,560	7.9
Oct. 27-28----------	40,950			66	12	117		98	140	175		3.8		596	.81	65,900	214	134	54	3.5	1,010	7.8
Oct. 29-31----------	16,130			57	10	101		110	109	150		1.9		501	.68	21,820	183	93	55	3.2	866	7.7
Nov. 1-5----------	5,862			83	16	180		82	170	280		2.0		818	1.11	12,950	273	206	59	4.7	1,390	7.6
Nov. 6-9----------	1,982			129	26	269		147	263	435		2.0		1,240	1.69	6,640	429	308	58	5.6	2,090	7.7
Nov. 10----------	1,370			160	34	406		145	353	655		2.3		1,740	2.37	6,440	539	420	62	7.6	2,900	7.9
Nov. 11----------	1,540			198	41	511		168	438	825		3.0		2,170	2.95	9,020	662	525	63	8.6	3,510	8.0
Nov. 12----------	1,300			255	53	718		174	589	1,170		3.5		2,990	4.07	10,490	854	712	65	11	4,700	8.1
Nov. 13----------	1,130			300	59	861		170	705	1,420		3.0		3,560	4.84	10,860	991	852	65	12	6,550	8.0
Nov. 14-20----------	918			236	52	700		177	532	1,140		3.7		2,860	3.89	7,090	803	658	65	11	4,600	7.8
Nov. 21----------	1,030			260	59	755		200	563	1,270		4.3		3,130	4.26	8,700	891	727	65	11	4,930	8.1
Nov. 22-23- ----------	5,360			82	19	185		129	133	308		3.1		840	1.14	12,080	282	177	59	4.8	1,460	7.3
Nov. 24----------	4,760			68	15	149		111	106	238		2.6		666	.91	8,560	231	140	58	4.3	1,170	7.8
Nov. 25-26----------	1,995			88	21	213		110	181	348		2.0		928	1.26	5,000	306	216	60	5.3	1,610	7.9
Nov. 27-30----------	1,085			142	33	360		136	317	585		2.3		1,560	2.12	4,570	490	378	61	7.1	2,620	7.7
Dec. 1-5----------	742			182	42	461		169	375	770		2.6		1,990	2.71	3,990	626	488	62	8.0	3,290	8.1
Dec. 6----------	4,010			144	36	340		168	290	570		3.2		1,530	2.08	16,570	508	370	59	6.5	2,590	8.0
Dec. 7----------	5,720			64	16	137		118	105	222		4.3		638	.87	9,850	226	129	57	4.0	1,120	7.7
Dec. 8-9----------	2,895			78	19	215		132	115	355		2.5		894	1.22	6,990	272	164	63	5.7	1,580	7.7
Dec. 10----------	1,640			97	25	216		122	166	370		2.0		986	1.34	4,370	345	245	58	5.1	1,710	7.9
Dec. 11----------	1,380			190	42	496		142	422	850		2.6		2,070	2.82	7,710	645	528	63	8.5	3,510	8.1
Dec. 12-20----------	778			146	32	357		168	290	600		2.5		1,510	2.05	3,170	495	358	61	7.0	2,620	8.0
Dec. 21-31----------	454			256	58	616		a263	525	1,030		3.8		2,630	3.58	3,220	875	660	60	9.1	4,300	8.3
Jan. 1-10, 1954-------	348			264	70	687		237	578	1,200		3.8		3,040	4.13	2,860	945	751	61	9.7	4,820	7.9
Jan. 11-20----------	370			266	65	695		211	573	1,200		2.2		3,040	4.13	3,040	930	757	62	9.9	4,810	7.7
Jan. 21-31----------	376			234	62	621		180	537	1,090		1.2		2,770	3.77	2,810	840	692	62	9.3	4,460	7.9
Feb. 1-10----------	299			252	72	729		173	617	1,260		1.2		3,160	4.30	2,550	925	783	63	10	5,000	7.6
Feb. 11-20----------	241			252	76	742		164	626	1,290		.7		3,100	4.22	2,020	940	806	63	11	5,040	7.3
Feb. 21-28----------	244			243	89	742		175	610	1,270		.4		3,300	4.49	2,170	972	829	62	10	5,160	7.8
Mar. 1-10----------	202			234	78	674		210	526	1,180		1.0		2,850	3.88	1,550	905	733	62	9.7	4,630	8.0
Mar. 11-20----------	194			238	79	699		197	547	1,200		1.0		2,870	3.90	1,500	920	758	62	10	4,800	7.9
Mar. 21-31----------	214			232	79	687		187	541	1,190		.5		2,820	3.84	1,630	905	752	62	9.9	4,730	7.8

RED RIVER NEAR GAINESVILLE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954-------	190	--	--	194	70	591	--	161	476	1,020	--	2.3	--	2,660	3.62	1,360	770	638	62	9.3	4,200	7.8
Apr. 11-12------------	422	--	--	182	54	500	--	162	388	895	--	2.3	--	2,170	2.95	2,470	675	542	62	8.4	3,530	8.1
Apr. 13-14------------	2,430	--	--	122	36	331	--	141	210	575	--	2.5	--	1,400	1.90	9,190	452	336	61	6.8	2,450	8.2
Apr. 15-16------------	3,385	--	--	80	23	202	--	129	142	330	--	4.5	--	886	1.20	8,100	295	190	60	5.1	1,550	8.1
Apr. 17-20------------	2,655	--	--	182	36	460	--	124	430	730	--	3.8	--	2,030	2.76	14,550	600	498	62	8.2	3,220	8.2
Apr. 21-22------------	1,017	--	--	210	43	564	--	128	500	900	--	3.3	--	2,440	3.32	6,700	700	595	64	9.3	3,870	8.2
Apr. 23-27------------	548	--	--	250	53	890	--	140	586	1,420	--	1.8	--	3,440	4.68	5,090	840	726	70	13	5,510	8.0
Apr. 28-29------------	889	--	--	174	36	511	--	150	351	835	--	2.6	--	2,050	2.79	4,920	580	457	66	9.2	3,470	8.0
Apr. 30----------------	835	--	--	129	28	371	--	b129	209	635	--	2.3	--	1,540	2.09	3,470	436	330	65	7.7	2,580	8.3
May 1-3, 6-8----------	6,433	--	--	53	10	90	--	109	67	149	--	3.5	--	468	.64	8,130	174	84	53	3.0	802	7.9
May 4-5, 9-10---------	6,748	--	--	76	16	144	--	120	132	245	--	4.6	--	750	1.02	13,660	254	156	55	3.9	1,270	7.9
May 11, 16-17---------	19,120	--	--	72	8.4	107	--	119	110	175	--	1.8	--	590	.80	30,460	214	116	52	3.2	997	8.1
May 12-13-------------	41,950	--	--	52	6.2	74	--	102	70	114	--	1.4	--	412	.56	46,670	155	72	51	2.6	698	8.0
May 14-15, 18-20------	34,640	--	--	94	17	173	--	118	195	288	--	1.8	--	886	1.20	82,870	306	210	55	4.3	1,500	7.9
May 21----------------	7,870	--	--	87	19	166	--	135	153	282	--	2.0	--	876	1.19	18,610	294	184	55	4.2	1,430	8.2
May 22-27-------------	14,240	--	--	162	31	362	--	148	385	565	--	2.5	--	1,650	2.24	63,440	530	408	60	6.8	2,710	8.2
May 28-31-------------	19,200	--	--	109	16	172	--	120	232	278	--	2.2	--	938	1.28	48,630	336	238	53	4.1	1,550	7.8
June 1-2--------------	9,035	--	--	93	22	117	--	136	174	210	--	5.2	--	736	1.00	17,950	322	210	44	2.8	1,250	--
June 3----------------	5,720	--	--	120	23	182	--	138	232	330	--	5.0	--	1,020	1.39	15,750	396	283	50	4.0	1,670	8.2
June 4-5--------------	7,495	--	--	133	31	234	--	a138	264	428	--	3.8	--	1,220	1.66	24,690	460	346	53	4.7	2,100	8.4
June 6-7--------------	4,420	--	--	168	38	302	--	136	370	545	--	4.9	--	1,550	2.11	18,500	576	464	53	5.5	2,600	--
June 8-9--------------	7,495	--	--	120	26	212	--	126	226	375	--	5.2	--	1,060	1.44	21,450	408	305	53	4.6	1,830	7.8
June 10---------------	7,670	--	--	96	20	170	--	110	177	302	--	4.6	--	869	1.18	18,000	320	230	54	4.1	1,480	8.0
June 11-13------------	5,777	--	--	93	23	178	--	118	152	330	--	5.2	--	887	1.21	13,840	328	231	54	4.3	1,570	8.0
June 14-18------------	5,534	--	--	272	61	585	--	138	680	940	--	5.0	--	2,650	3.60	39,600	930	817	58	8.3	4,260	8.2
June 19-20------------	4,465	--	--	162	45	372	--	186	333	620	--	7.7	--	1,720	2.34	20,740	590	438	58	6.7	2,830	8.2
June 21-23------------	2,203	--	--	206	53	442	--	164	475	715	--	3.2	--	2,070	2.82	12,310	730	596	57	7.1	3,280	8.1
June 24-30------------	1,056	--	--	254	55	599	--	a168	591	985	--	2.4	--	2,640	3.59	7,530	860	722	60	8.9	4,310	8.4
July 1-10-------------	548	20	0.02	262	79	703	12	122	664	1,280	0.3	3.1	0.57	3,080	4.19	4,560	980	880	61	9.8	5,090	8.0
July 11-20------------	339	--	--	242	80	688	--	136	607	1,150	--	--	--	3,020	4.11	2,760	935	824	62	9.8	4,990	8.2
July 21-31------------	262	--	--	224	85	686	--	136	557	1,200	--	--	--	2,910	3.96	2,060	910	798	62	9.9	4,770	7.9
Aug. 1-10-------------	252	--	--	184	74	542	--	131	436	1,000	--	2.9	--	2,390	3.25	1,630	765	658	61	8.5	4,160	8.0
Aug. 11-20------------	163	--	--	196	85	613	--	137	494	1,100	--	2.8	--	2,660	3.62	1,170	840	728	61	9.2	4,680	8.0
Aug. 21-29------------	176	--	--	212	73	676	--	134	503	1,220	--	--	--	2,830	3.85	1,340	830	720	64	10	4,760	7.9
Aug. 30-31------------	804	--	--	460	86	1,140	--	123	1,190	2,000	--	--	--	5,210	7.09	11,310	1,500	1,400	62	13	8,010	8.1
Sept. 1-4-------------	432	--	--	430	70	1,040	--	110	1,140	1,700	--	--	--	4,720	6.42	5,510	1,360	1,270	62	12	7,330	8.0
Sept. 5-10------------	225	--	--	340	81	858	--	96	909	1,500	--	--	--	3,880	5.28	2,360	1,180	1,100	61	11	6,150	7.9
Sept. 11-20-----------	159	17	.01	276	78	790	12	121	704	1,350	.5	1.8	.45	3,290	4.47	1,410	1,010	911	63	11	5,470	7.7
Sept. 21-30-----------	120	--	--	240	67	687	--	140	575	1,280	--	--	--	3,090	4.20	1,000	875	760	63	10	5,070	8.0
Weighted average----	3,090	--	--	115	23	242	--	123	246	394	--	--	--	1,140	1.55	9,510	382	280	58	5.4	1,890	--

a Includes equivalent of 2 ppm carbonate (CO_3).
b Includes equivalent of 4 ppm carbonate (CO_3).

RED RIVER AT DENISON DAM NEAR DENISON, TEX.

LOCATION.--Immediately below dam on Red River, 1.7 miles upstream from Sand Creek, 4 miles northwest of Denison, Grayson County, and 3 miles upstream from gaging station near Colbert, Bryan County, Okla.
DRAINAGE AREA.--39,719 square miles above dam, 39,777 square miles above gaging station, of which 5,936 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: May 1944 to September 1954.
Water temperatures: October 1945 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,040 ppm Nov. 1-30; minimum, 830 ppm July 1-31.
Hardness: Maximum, 364 ppm Dec. 1-31; minimum, 296 ppm July 1-31.
Specific conductance: Maximum daily, 2,090 micromhos Nov. 6; minimum daily, 1,350 micromhos June 21.
EXTREMES, 1944-54.--Dissolved solids: Maximum, 1,430 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 464 ppm Oct. 21-31, 1945.
Hardness: Maximum, 522 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 233 ppm Dec. 21-31, 1945, Jan. 11-20, 1946.
Specific conductance: Maximum daily, 3,520 micromhos Aug. 14, 1944; minimum daily, 362 micromhos May 2, 1944.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of discharge for gaging station near Colbert, Okla., for water year October 1953 to September 1954 given in Water-Supply Paper 1341. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1953--------	2,196	11		94	28	200	--	127	218	332	--	1.0	0.20	a946	1.29	5,610	350	246	55	4.7	1,660	7.7
Nov. 1-30--------------	1,186	8.8		100	27	230	5.7	123	239	370	0.5	1.0	.18	1,040	1.41	3,330	360	260	58	5.3	1,750	7.9
Dec. 1-31--------------	2,221	9.0		98	29	218	5.5	124	254	348	.4	1.2	.17	1,020	1.39	6,120	364	262	56	5.0	1,760	7.8
Jan. 1-31, 1954--------	2,010	8.2		94	28	203	5.4	125	226	335	.5	1.5	.15	963	1.31	5,230	350	247	55	4.7	1,690	8.0
Feb. 1-28--------------	2,196	12		91	25	187	5.5	128	204	298	.5	1.5	.20	948	1.29	5,620	330	225	55	4.5	1,560	7.9
Mar. 1-31--------------	2,493	12		92	25	190	5.4	128	206	302	.5	1.2	.19	953	1.30	6,410	332	228	55	4.5	1,560	8.1
Apr. 1-30--------------	2,716	9.8		92	26	190	--	128	205	302	.4	2.0	.23	942	1.28	6,910	336	232	55	4.5	1,580	7.8
May 1-31---------------	12,400	9.5		91	26	193	--	131	205	310	.5	1.5	.19	946	1.29	31,670	334	226	56	4.6	1,590	7.9
June 1-30--------------	9,555	15		84	22	164	--	129	177	275	.4	2.2	.20	838	1.14	21,620	300	194	54	4.1	1,420	7.7
July 1-31--------------	4,608	15		84	21	165	--	128	178	275	.3	2.0	.20	830	1.13	10,330	296	191	55	4.2	1,390	7.9
Aug. 1-31--------------	3,187	13		85	21	173	4.9	125	179	268	.2	1.5	.08	849	1.15	7,310	298	196	55	4.3	1,430	7.6
Sept. 1-30-------------	2,462	14		86	21	170	--	127	182	270	.4	1.5	.12	851	1.16	5,660	301	197	55	4.2	1,430	7.6
Weighted average-----	3,950	12		89	24	184	--	128	200	299	0.4	1.7	0.18	908	1.23	9,680	320	216	56	4.5	1,530	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
SALT CREEK 6½ MILES SOUTHEAST OF PADUCAH																						
Feb. 10, 1954----------	2.31	--	--	--	--	11,300	--	89	3,800	18,400	--	--	--	--	--		--	--	--	--	48,500	7.8
NORTH FORK WICHITA RIVER 14 MILES SOUTHEAST OF PADUCAH																						
Feb. 10, 1954----------	10.2	--	--	--	--	4,820	--	128	2,460	7,660	--	--	--	--	--		--	--	--	--	24,000	7.8
NORTH FORK WICHITA RIVER 4½ MILES NORTH OF TRUSCOTT																						
Feb. 10, 1954----------	13.7	--	--	--	--	3,860	--	128	2,590	6,360	--	--	--	--	--		--	--	--	--	20,800	7.9
SOUTH FORK WICHITA RIVER 6 MILES EAST OF GUTHRIE																						
Feb. 10, 1954----------	5.19	--	--	--	--	7,870	--	114	2,950	13,100	--	--	--	--	--		--	--	--	--	36,800	7.8
SOUTH FORK WICHITA RIVER 4 MILES NORTH OF BENJAMIN																						
Feb. 10, 1954----------	5.90	--	--	--	--	6,530	--	105	3,000	11,100	--	--	--	--	--		--	--	--	--	32,200	7.7
WICHITA RIVER NEAR SEYMOUR																						
Feb. 10, 1954----------	17.6	--	--	--	--	3,490	--	102	2,240	5,860	--	--	--	--	--		--	--	--	--	19,100	7.8
LAKE KEMP NEAR SEYMOUR																						
June 15, 1954----------	--	4.7	0.02	140	28	324	5.6	78	373	520	0.4	0.5	0.31	1,430	1.94		464	400	60	6.5	2,430	7.2
LAKE WICHITA NEAR WICHITA FALLS																						
June 15, 1954----------	--	6.6	.37	34	8.8	66	5.7	104	36	109	.5	.2	.04	319	.43		121	36	53	2.6	592	7.2
LAKE KICKAPOO NEAR ARCHER CITY																						
June 15, 1954----------	--	3.1	.04	24	8.4	23	--	139	7.7	15	.5	2.8	.00	153	.21		94	0	35	1.0	274	7.6
LAKE TEXOMA AT PERRIN AIR FORCE BASE																						
Oct. 1, 1953----------	--	6.3	.01	97	28	243		111	236	388	.3	1.5	--	1,060	1.44		357	266	60	5.6	1,850	7.6
CANEY LAKE AT RED RIVER ARSENAL NEAR TEXARKANA																						
June 18, 1954----------	--	4.9	.03	2.8	1.9	3.4		18	4.4	.2	.7	.8	--	28	.04		15	0	33	.4	45.2	7.0

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
NORTH GROESBECK CREEK NEAR NORTH GROESBECK																						
Dec. 8, 1953	2.84	16	--	--	--	--	--	--	1,810	570	--	5.9	--	--	--		--	--	--	--	4,550	--
SOUTH GROESBECK CREEK NEAR ACME																						
Dec. 8, 1953	4.57	13	--	--	--	--	--	--	1,720	270	--	5.1	--	--	--		--	--	--	--	3,570	--
GROESBECK CREEK NEAR QUANAH																						
Dec. 8, 1953	11.0	15	--	--	--	268	--	--	1,740	415	--	4.4	--	--	--		--	--	--	--	4,070	--
WANDERERS CREEK AT ODELL																						
Oct. 31, 1953	6.69	22	--	--	--	--	--	187	663	192	--	9.5	--	--	--		770	617	--	--	2,090	8.0
Dec. 8	2.73	20	--	--	--	177	--	--	610	195	--	8.3	--	--	--		--	--	--	--	2,170	--
LELIA LAKE CREEK NEAR HEDLEY																						
Nov. 24, 1953	6.82	38	--	--	--	59	--	--	225	54	--	9.3	--	--	--		--	--	--	--	961	--
DOZIER CREEK NEAR WELLINGTON																						
Nov. 25, 1953	.40	24	--	--	--	--	--	--	1,640	73	--	9.3	--	--	--		--	--	--	--	2,820	--
NORTH FORK RED RIVER NEAR SHAMROCK																						
Dec. 8, 1953	13.0	26	--	--	--	--	--	--	445	388	--	.25	--	--	--		--	--	--	--	2,320	--
SWEETWATER CREEK NEAR WHEELER																						
Dec. 8, 1953	5.91	36	--	--	--	29	--	--	20	19	--	1.0	--	--	--		--	--	--	--	506	--
ELM CREEK NEAR SHAMROCK																						
Dec. 8, 1953	1.93	26	--	--	--	--	--	--	377	98	--	3.0	--	--	--		--	--	--	--	1,300	--
ROARING SPRINGS NEAR ROARING SPRINGS																						
Jan. 20, 1954	1.34	43	--	--	--	--	--	--	76	95	--	9.2	--	--	--		--	--	--	--	948	--
NORTH FORK WICHITA RIVER 10 MILES SOUTHEAST OF PADUCAH																						
Feb. 10, 1954	3.53	--	--	--	--	3,080	--	110	2,110	4,930	--	--	--	--	--		--	--	--	--	16,800	7.8

SABINE RIVER BASIN

SABINE RIVER NEAR EMORY, TEX.

LOCATION.--At gaging station at bridge on State Highway 19, 3.0 miles upstream from Giladon Creek, 7.5 miles south of Emory, Rains County, 8.0 miles downstream from McBees Creek, and at mile 501.
DRAINAGE AREA.--965 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1952 to September 1954 (discontinued).
Water temperatures: July 1952 to September 1954 (discontinued).
EXTREMES, 1953-54.--Dissolved solids: Maximum, 236 ppm July 1-7; minimum, 71 ppm Jan. 11-12, 14-19.
Hardness: Maximum, 146 ppm July 1-7; minimum, 36 ppm Jan. 11-12, 14-19.
Specific conductance: Maximum daily, 420 micromhos May 6; minimum daily, 67.3 micromhos Feb. 19.
Water temperatures: Minimum observed, 35°F Dec. 24.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 238 ppm July 1-8, 15, 1953; minimum, 47 ppm Apr. 24, 29-30, 1953.
Hardness: Maximum, 156 ppm June 22-30, 1953; minimum, 23 ppm Dec. 19-20, 1953.
Specific conductance: Maximum daily, 442 micromhos July 8, 1953; minimum daily, 48.8 micromhos July 18, 1953.
Water temperatures: Maximum observed, 98°F June 11, 1953; minimum observed, 35°F Dec. 24, 1953.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1392.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953----------	a0	--		--	--	--		108	--	3.5		--		--	--	--	81	0	--	--	186	8.0
Nov. 1-4, 12-14, 21----	38.2	13		19	2.7	12		71	15	5.5		4.5		138	0.19	14.2	58	0	31	0.7	173	7.9
Nov. 5-11, 15-20-------	82.9	14		29	3.6	21		103	25	12		6.3		182	.25	40.7	88	3	34	1.0	265	7.9
Nov. 22-30-------------	141	12		33	2.7	16		114	20	8.0		3.0		172	.23	65.5	94	0	27	.7	252	7.9
Dec. 1-2, 6-11, 18-20--	400	12		27	3.2	17		95	18	14		2.2		156	.21	168	80	3	32	.8	226	7.6
Dec. 3-5, 12-17--------	1,033	11		16	2.6	11		60	13	7.5		2.0		135	.18	377	51	1	32	.7	154	7.6
Dec. 21-31-------------	12.0	11		27	3.4	16		98	21	8.8		2.0		160	.22	5.18	81	1	30	.8	235	7.7
Jan. 1-10, 1954--------	17.7	12		29	3.6	18		106	22	10		3.0		163	.22	7.79	87	0	31	.8	253	7.9
Jan. 11-12, 14-19------	3,256	8.8		11	2.1	6.5	3.1	44	10	4.2		3.0		b71	.10	624	36	0	26	.5	114	7.7
Jan. 13, 20-31---------	874	9.6		28	2.8	18		101	22	8.8		4.0		170	.23	401	81	0	33	.9	243	8.0
Feb. 1-11--------------	139	11		27	3.1	15		96	15	12		2.2		158	.21	59.3	80	1	29	.7	238	7.8
Feb. 12-18, 24-28------	19.0	10		30	3.8	16		107	18	12		2.0		167	.23	8.57	90	3	28	.7	259	7.4
Feb. 19-23-------------	579	7.8		17	2.9	8.1	1.2	62	12	5.2		2.2		b86	.12	134	54	4	24	.5	154	7.2
Mar. 1-11--------------	4.77	15		34	3.9	19		122	23	11		2.5		183	.25	2.36	101	1	29	.8	292	8.1
Mar. 12-23-------------	2.42	12		39	5.0	22		139	27	16		1.5		203	.28	1.33	118	4	29	.9	329	8.0
Mar. 24-31-------------	2.79	15		41	5.1	24		149	26	18		.5		225	.31	1.69	123	1	30	.9	353	8.1
Apr. 1-9, 11-12--------	59.9	13		42	2.7	34		154	30	22		1.5		228	.31	36.9	116	0	39	1.4	375	8.0
Apr. 10, 13-19---------	1,346	13		27	3.1	15		95	19	8.0		4.5		166	.23	603	80	2	29	.7	228	7.8
Apr. 20-30-------------	13.8	14		42	7.0	18		147	28	13		5.4		219	.30	8.16	134	13	22	.7	348	8.1
May 1, 3-10------------	120	12		32	3.7	25		113	22	22		4.8		199	.27	64.5	95	2	37	1.1	318	7.8
May 2, 11-20-----------	1,355	12		24	3.4	14		90	14	7.5		5.5		166	.23	607	74	0	28	.7	219	7.6
May 21-31--------------	91.5	12		36	4.7	16		132	20	8.5		4.0		187	.25	46.2	109	1	24	.7	296	7.7
June 1-10--------------	306	22		34	3.1	16		124	18	7.2		3.5		172	.23	142	98	0	27	.7	266	8.0
June 11-20-------------	4.03	20		41	3.9	21		150	22	11		2.2		201	.27	2.19	118	0	27	.8	324	8.0
June 22-30-------------	1.28	19		45	4.7	22		171	22	11		1.8		213	.29	.74	132	0	27	.8	352	8.0
July 1-7---------------	a.01	14		48	6.4	21		187	21	11		2.2		236	.32	.01	146	0	24	.8	373	7.8
Weighted average------	248	11		21	2.8	14		78	15	7.5		3.6		134	0.18	89.7	64	0	32	0.8	191	--

a Less than 0.05 second-foot flow Oct. 1-31, July 2 to Sept. 30.
b Sum of determined constituents.

SABINE RIVER NEAR TATUM, TEX.

LOCATION.--At gaging station at bridge on State Highway 43, 5 miles upstream from Potters Creek, 5.2 miles northeast of Tatum, Rusk County, 7 miles downstream from Cherokee Bayou, and at mile 339.
DRAINAGE AREA.--3,586 square miles.
RECORDS AVAILABLE.--Chemical analyses: February 1952 to September 1954.
Water temperatures: February 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 682 ppm Dec. 7-10, 13; minimum, 178 ppm Jan. 22-31.
Hardness: Maximum, 106 ppm Sept. 1-10; minimum, 39 ppm May 12-23.
Specific conductance: Maximum daily, 1,200 micromhos Dec. 7-10; minimum daily, 187 micromhos May 15.
Water temperatures: Maximum observed, 95°F July 7, 13; minimum observed, 45°F on several days during December and January.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 682 ppm Dec. 7-10, 13, 1953; minimum, 82 ppm May 10-20, 1953.
Hardness: Maximum, 106 ppm Sept. 1-10, 1954; minimum, 29 ppm Sept. 9-10, 12-18, 1953.
Specific conductance: Maximum daily, 1,200 micromhos Dec. 7-10, 1953; minimum daily, 123 micromhos May 10-11, 1953.
Water temperatures: Maximum observed 95°F July 7, 13, 1954; minimum observed, 45°F on several days during December 1953 and January 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-11, 1953--------	91.4	15		16	6.0	126		38	16	205		1.5		432	0.59	107	64	34	81	6.8	786	7.2
Oct. 12-23, 27-28------	80.6	14		15	5.8	105		47	18	165		.8		367	.50	79.9	62	23	79	5.8	664	7.5
Oct. 24-26, 29-31------	126	13		18	6.9	144		47	19	232		1.0		470	.64	160	74	35	81	7.3	869	7.3
Nov. 1-7, 20-23--------	360	11		17	6.0	144		40	19	232		1.2		480	.65	467	67	34	82	7.7	802	7.0
Nov. 8-11, 14-19-------	289	14		12	4.6	66		32	17	104		1.0		255	.35	199	49	23	74	4.1	446	7.0
Nov. 12-13, 24-30------	520	14		14	5.0	78		29	18	129		1.2		302	.41	424	56	32	75	4.6	524	6.8
Dec. 1-5, 18-19, 29-31-	1,401	18		14	4.6	78		25	25	125		1.2		318	.43	1,200	54	33	76	4.6	521	6.8
Dec. 6, 11-12, 14-17, 20-28----------	1,944	17		14	4.1	42		30	22	67		1.0		228	.31	1,200	52	27	64	2.5	323	7.0
Dec. 7-10, 13----------	1,956	18		20	4.9	207		18	38	330		.8		682	.93	3,600	70	56	87	11	1,200	6.6
Jan. 1-15, 1954--------	815	28		16	5.2	77		18	34	126		1.2		301	.41	662	61	47	73	4.3	529	6.8
Jan. 16-21-------------	3,247	18		13	4.5	52		12	30	86		1.2		236	.32	2,070	51	41	69	3.2	381	6.9
Jan. 22-31-------------	4,639	17		11	3.2	28		26	21	40		1.5		178	.24	2,230	41	19	60	1.9	225	7.2
Feb. 1-9---------------	3,608	23		19	5.3	43		46	34	62		2.0		230	.31	2,240	69	32	57	2.2	358	7.5
Feb. 10-25-------------	1,239	24		17	6.4	64		28	39	102		1.2		287	.39	960	69	46	67	3.4	479	7.4
Feb. 26-28, Mar. 1-5---	2,046	18		14	4.9	45		28	33	67		2.2		231	.31	1,280	55	32	64	2.7	346	7.2
Mar. 6-15--------------	652	28		16	6.4	64		26	35	104		1.5		281	.38	495	66	45	68	3.4	476	7.2
Mar. 16-23-------------	613	23		16	6.8	72		25	37	117		1.8		310	.42	513	68	47	70	3.8	512	7.2
Mar. 24-31-------------	694	23		17	7.4	71		23	39	118		1.0		314	.43	588	73	54	68	3.6	529	7.2
Apr. 1-15--------------	588	18		20	8.2	95		29	46	154		1.0		380	.52	603	84	60	71	4.5	665	7.2
Apr. 16-19, 26-30------	1,141	19		21	5.9	55		51	35	83		2.0		263	.36	810	77	35	61	2.7	440	7.3
Apr. 20-25-------------	2,253	17		20	4.5	32		64	26	40		3.0		197	.27	1,200	68	16	51	1.7	296	7.5
May 1-11---------------	1,095	20		14	4.1	56		33	24	84		2.5		236	.32	698	52	25	70	3.3	399	7.4
May 12-23--------------	4,520	15		11	2.8	37		25	20	54		3.5		192	.26	2,340	39	18	68	2.6	274	7.3
May 24-31--------------	1,926	20		18	3.7	46		51	20	67		3.0		210	.29	1,090	60	18	62	2.6	346	7.8
June 1-10--------------	1,108	22		15	5.1	54		38	22	85		1.5		226	.31	676	58	27	67	3.0	390	7.1
June 11-22-------------	430	24		25	5.3	52		86	20	74		1.5		244	.33	283	84	14	57	2.5	432	7.7
June 23-30-------------	113	23		26	6.7	88		84	18	139		.5		348	.47	106	92	24	67	4.0	641	7.6
July 1-10--------------	53.5	24		25	7.3	100		91	11	158		1.8		398	.54	57.5	92	18	70	4.5	694	7.7
July 11-20-------------	30.0	22		24	8.0	111		96	8.4	174		2.0		420	.57	34.0	93	14	72	5.0	747	7.7
July 21-31-------------	27.5	21		25	8.1	123		99	6.4	195		1.5		460	.63	34.1	96	15	74	5.5	825	7.6
Aug. 1-10--------------	22.6	19		23	7.2	116		93	13	176		1.5		416	.57	25.4	87	11	74	5.4	761	7.8
Aug. 11-20-------------	14.1	15		23	7.2	117		92	16	176		.8		416	.57	15.8	87	12	74	5.4	764	7.9
Aug. 21-31-------------	13.9	14		24	8.2	138		95	15	212		1.0		469	.64	17.6	94	16	76	6.2	864	7.6
Sept. 1-10-------------	10.8	18		28	8.7	163		98	12	260		2.0		553	.75	16.1	106	26	77	6.9	1,060	8.1
Sept. 11-20------------	11.1	16		27	8.6	158		100	13	248		1.8		526	.72	15.8	103	21	77	6.8	1,020	8.1
Sept. 21-30------------	10.3	14		25	8.4	153		108	9.7	235		.8		509	.69	14.2	97	8	77	6.8	984	8.1
Weighted average-----	1,004	19		15	4.6	55		32	27	85		1.9		252	0.34	683	56	30	68	3.2	398	--

SABINE RIVER NEAR RULIFF, TEX.

LOCATION.--At gaging station at bridge on State Highway 235, 2.4 miles north of Ruliff, Newton County, 4.2 miles upstream from Kansas City-Southern Railway bridge, 4.5 miles downstream from Cypress Creek and at mile 40.
DRAINAGE AREA.--9,440 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1947 to September 1954.
Water temperatures: October 1947 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 326 ppm Dec. 16-22; minimum, 57 ppm May 4-10, 15.
Hardness: Maximum, 52 ppm Dec. 16-22; minimum, 16 ppm May 4-10, 15.
Specific conductance: Maximum daily, 588 micromhos Dec. 21; minimum daily, 61.6 micromhos May 6.
Water temperatures: Maximum observed, 89° F June 9; minimum observed, 50° F Jan. 20-23.
EXTREMES, 1945-46, 1947-54.--Dissolved solids: Maximum, 411 ppm Dec. 26-27, 1948; minimum, 35 ppm June 5-11, 1950.
Hardness: Maximum, 64 ppm Aug. 1, 11, 16-19, 21-23, 1948; minimum, 8 ppm May 20-24, 1953.
Specific conductance: Maximum daily, 774 micromhos Dec. 26, 1948; minimum daily, 32.9 micromhos May 22, 1953.
Water temperatures (1947-54): Maximum observed, 95° F Aug. 12, 1953; minimum observed, 34° F Jan. 24, 1948.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-2, 10-20, 1953--	9,784	23		7.3	3.0	29		36	6.7	40		1.0		134	0.18	3,540	30	1	68	2.3	211	7.2
Oct. 3-9----------	1,141	21		9.1	3.3	54		32	8.6	83		.5		196	.27	604	36	10	76	3.9	346	7.1
Oct. 21-31----------	9,192	22		6.5	2.5	24		34	5.7	31		1.2		114	.16	2,830	26	0	66	2.0	178	7.0
Nov. 1-10----------	1,001	20		6.4	2.4	28		31	6.1	38		1.2		139	.19	376	26	0	70	2.4	193	6.9
Nov. 11-20----------	1,067	21		6.9	2.8	37		33	6.6	53		.5		147	.20	423	28	2	74	3.0	247	7.1
Nov. 21-30----------	1,419	20		6.9	2.8	41		32	8.4	59		.2		156	.21	598	28	2	76	3.3	266	6.9
Dec. 1-15----------	4,799	11		7.0	2.5	29		18	11	46		1.5		146	.20	1,890	28	14	70	2.4	219	6.9
Dec. 16-22----------	4,977	14		13	4.9	86		18	25	141		1.0		326	.44	4,380	52	38	78	5.2	543	6.6
Dec. 23-31----------	5,233	13		8.2	2.8	21		22	14	31		1.5		a102	.14	1,440	32	14	58	1.6	182	6.6
Jan. 1-11, 15-17, 1954-	5,112	14		7.0	2.5	20		18	13	31		.8		a97	.13	1,340	28	14	61	1.7	186	7.2
Jan. 12-14, 18-23------	6,182	15		7.7	3.8	37		16	21	56		1.0		a150	.20	2,500	34	22	70	2.7	278	6.8
Jan. 24-31----------	7,670	13		8.0	3.7	30		14	22	46		.8		a130	.18	2,690	35	24	65	2.2	243	7.1
Feb. 1-8----------	7,972	12		9.7	3.7	26		26	20	36		1.0		a121	.16	2,600	39	18	59	1.8	218	7.1
Feb. 9-18----------	5,990	15		13	4.1	30		31	26	44		1.2		a148	.20	2,390	50	24	57	1.9	269	7.2
Feb. 19-28----------	3,750	16		12	4.5	35		32	25	51		.8		a160	.22	1,620	48	22	61	2.2	288	7.3
Mar. 1-9----------	4,444	16		11	4.8	39		23	26	61		.8		201	.27	2,410	47	28	65	2.5	305	7.2
Mar. 10-20----------	2,754	19		11	4.8	27		30	21	42		1.0		170	.23	1,260	47	22	56	1.7	245	7.2
Mar. 21-31----------	2,433	20		11	4.2	36		32	20	54		1.5		177	.24	1,160	45	19	64	2.4	286	7.2
Apr. 1-10----------	2,229	18		11	5.0	38		34	21	57		.5		182	.25	1,100	48	20	63	2.4	305	7.3
Apr. 11-16, 26-30------	4,071	14		9.8	4.3	39		27	24	56		.5		176	.24	1,930	42	20	67	2.6	285	7.0
Apr. 17-25----------	1,281	9.0		5.0	1.8	20		17	11	26		.5		a81	.11	280	20	6	68	1.9	145	6.6
May 1-3, 11-14, 16-20--	12,550	11		5.4	2.2	17		12	10	26		3.5		a81	.11	2,740	22	12	62	1.6	133	6.4
May 4-10, 15----------	20,380	9.6		3.8	1.7	11		12	6.4	16		2.5		a57	.08	3,140	16	6	60	1.2	83.6	6.4
May 21-31----------	15,640	12		6.2	2.2	17		14	12	26		1.8		a84	.11	3,550	24	13	60	1.5	138	6.5
June 1-10----------	6,428	20		10	3.0	25		37	14	31		2.8		136	.18	2,360	38	7	59	1.7	201	7.4
June 11-20----------	2,830	24		11	2.1	40		39	15	52		1.5		182	.25	1,390	36	4	70	2.9	273	7.3
June 21-30----------	1,759	24		11	4.0	34		42	14	49		1.2		161	.22	765	44	10	63	2.3	272	7.2
July 1-10----------	1,039	22		11	4.5	32		50	12	44		1.2		159	.22	446	46	5	61	2.1	269	7.6
July 11-20----------	749	22		11	4.3	30		53	9.2	39		2.5		153	.21	309	45	2	59	1.9	243	7.4
July 21-31----------	601	21		10	4.2	31		51	8.4	40		2.5		149	.20	242	42	0	61	2.1	243	7.2
Aug. 1-10----------	693	20		9.0	3.2	29		44	7.2	38		.8		a129	.18	241	36	0	64	2.1	223	7.0
Aug. 11-20----------	438	20		9.4	3.4	30		48	7.5	38		1.0		a133	.18	157	38	0	63	2.1	223	6.9
Aug. 21-31----------	421	20		9.1	3.2	30		47	6.7	38		1.0		134	.18	152	36	0	64	2.2	225	6.9
Sept. 1-10----------	371	21		8.8	3.3	32		48	6.1	42		1.0		141	.19	141	36	0	67	2.4	231	7.4
Sept. 11-20----------	344	22		8.8	3.3	34		48	6.1	44		1.0		147	.20	137	36	0	67	2.5	242	7.5
Sept. 21-30----------	329	20		7.1	2.8	33		49	5.4	39		1.0		138	.19	123	29	0	71	2.7	225	7.7
Weighted average-----	4,097	14		8.3	2.9	26		22	14	38		1.6		121	0.16	1,340	32	14	63	2.0	202	--

a Sum of determined constituents.

COW BAYOU NEAR MAURICEVILLE, TEX.

LOCATION.--At gaging station at bridge on State Highway 235, half a mile upstream from Kansas City Southern Railway Bridge, and 3 miles southeast of Mauriceville, Orange County.
DRAINAGE AREA.--127 square miles.
RECORDS AVAILABLE.--Chemical analyses: March 1952 to September 1954.
Water temperatures: March 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 639 ppm Oct. 14-25; minimum, 30 ppm May 14-22, 25-29.
Hardness: Maximum, 164 ppm Oct. 14-25; minimum, 9 ppm May 14-22, 25-29.
Specific conductance: Maximum daily, 1,180 micromhos Sept. 14; minimum daily, 28.8 micromhos May 26.
Water temperatures: Maximum observed, 84°F Oct. 3; minimum observed, 41°F Dec. 24.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 1,030 ppm July 29-31, 1953; minimum, 23 ppm Apr. 23-30, 1952.
Hardness: Maximum, 186 ppm Nov. 1-9, 1953; minimum, 9 ppm Dec. 4-5, 19-23, 30-31, 1952, Apr. 1-3, 23-30, 1953, May 14-22, 25-29, 1954.
Specific conductance: Maximum daily, 2,190 micromhos Aug. 24, 1953; minimum daily, 22.0 micromhos Apr. 24, 1952.
Water temperatures: Maximum observed, 96°F Aug. 10, 1953; minimum observed, 41°F Dec. 24, 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-13, 1953--------	0.10	30		33	16	147		101	19	258		1.2		a579	0.79	0.16	148	66	68	5.2	1,020	7.6
Oct. 14-25-------------	b.09	30		36	18	163		108	21	288		1.0		a639	.87	.16	164	76	68	5.5	1,120	7.5
Oct. 26-31-------------	.12	24		28	14	129		77	17	232		1.0		a518	.70	.17	128	64	69	5.0	895	7.5
Nov. 1-6, 10-19--------	b.08	34		26	12	125		82	18	212		1.2		a510	.69	.11	114	48	70	5.1	851	7.4
Nov. 7-9, 25-26--------	.10	22		16	8.7	81		55	12	137		1.0		305	.41	.08	76	31	70	4.0	565	7.4
Nov. 20-24, 27-30------	.19	14		8.8	4.5	45		31	7.4	74		.8		170	.23	.09	40	15	71	3.1	315	6.7
Dec. 1-2, 22-----------	15.1	17		9.6	4.3	59		27	11	96		1.2		211	.29	8.61	42	20	75	4.0	386	7.2
Dec. 3-4, 8-14, 20, 25-29----------	41.2	9.6		3.0	1.6	9.9	2.0	8	6.0	18		.8		55	.07	6.1	14	8	56	1.1	90.6	6.3
Dec. 5-7, 15-19, 21, 23-24, 30-31----------	35.3	9.6		3.8	1.8	36		6.0	5.4	59		.8		119	.16	11.3	17	12	82	3.8	188	6.1
Jan. 1-9, 1954---------	64.9	7.1		2.6	1.5	8.3	1.3	9	4.6	14		.5		44	.06	7.7	13	5	56	1.0	76.9	6.6
Jan. 10, 12, 20-31-----	33.9	7.8		3.7	1.7	18		9	3.5	31		.5		70	.10	6.4	16	9	70	2.0	130	6.4
Jan. 11, 13-19---------	130	5.9		2.5	1.4	7.8	1.3	8	3.9	14		.5		41	.06	14.4	12	5	55	1.0	71.9	6.4
Feb. 1-10--------------	11.5	12		3.6	1.8	5.0	1.1	6	2.1	14		.5		43	.06	1.3	16	12	38	.5	76.9	6.1
Feb. 11-19-------------	3.31	13		3.8	2.0	7.1	1.3	8	2.3	18		.5		52	.07	.46	18	11	44	.7	85.1	6.3
Feb. 20-28-------------	1.40	13		4.3	2.2	8.6	1.5	8	2.5	22		.5		59	.08	.22	20	13	46	.8	101	6.4
Mar. 1-13--------------	4.31	13		3.8	2.1	8.7		6	3.0	20		1.0		55	.07	.64	18	13	51	.9	94.5	6.4
Mar. 14-21, 23, 28, 30-31----------	2.52	12		3.5	1.8	8.5		7	3.0	18		.5		50	.07	.34	16	10	53	.9	89.0	6.4
Mar. 22, 24-27, 29-----	1.12	12		5.2	2.5	17		10	4.2	33		1.0		80	.11	.24	23	15	61	1.5	147	6.8
Apr. 1-6, 11-17--------	34.2	9.0		6.2	2.8	34		8	5.8	61		1.8		125	.17	11.5	27	20	73	2.8	235	6.4
Apr. 7-9---------------	5.43	8.4		15	6.0	95		9	4.5	182		1.2		a386	.52	5.7	62	54	77	5.3	633	6.5
Apr. 10, 18-30---------	196	7.8		3.1	.9	6.5		8	3.5	10		1.5		37	.05	19.6	11	5	55	.8	63.4	6.1
May 1-10---------------	189	6.2		3.0	1.3	11		7	3.6	18		1.5		48	.07	24.5	13	7	64	1.3	82.1	6.4
May 11-13, 23-24, 30-31	92.0	6.2		2.6	1.0	8.0		6	2.1	14		1.5		38	.05	9.4	11	6	62	1.1	62.0	5.9
May 14-22, 25-29-------	181	5.4		2.0	.9	5.7		8	2.2	7.8		1.5		30	.04	14.7	9	2	59	.8	46.5	6.5
June 1-8---------------	13.1	12		3.4	1.6	8.3		8	2.8	16		1.5		50	.07	1.8	15	9	55	.9	89.8	6.2
June 9-13, 16-20-------	.25	17		7.8	3.4	33		22	6.0	57		1.5		137	.19	.09	33	15	68	2.5	245	7.3
June 14-15, 21-25------	.13	22		14	7.1	61		41	9.8	107		2.0		a330	.45	.12	64	31	67	3.3	454	7.5
June 26-30-------------	b.02	26		22	12	106		70	15	185		1.2		a458	.62	.02	104	47	69	4.5	765	7.8
July 1-11--------------	0	32		29	16	139		90	18	246		1.2		a583	.79	--	138	65	69	5.1	997	7.8
July 12-16, 25-31------	b.23	18		8.7	5.1	39		28	9.1	67		1.5		162	.22	.10	43	20	67	2.6	300	7.1
July 17-24-------------	.26	15		3.9	1.9	18		12	7.1	28		1.2		81	.11	.06	18	8	70	1.9	130	7.0
Aug. 1-4---------------	.22	18		--	--	22		12	7.7	37		1.0		a206	.28	.12	23	13	68	2.0	166	6.5
Aug. 5-6---------------	.10	22		11	6.2	52		34	11	89		1.2		a293	.40	.08	53	25	68	3.1	379	7.2
Aug. 7-10--------------	0	26		19	9.2	86		59	13	149		1.2		a378	.51	--	86	37	69	4.1	613	7.7
Aug. 11-20-------------	0	31		26	14	121		82	17	212		1.2		a490	.67	--	122	56	68	4.7	878	7.5
Aug. 21-31-------------	b.05	32		31	17	142		96	18	255		.8		a569	.77	.08	148	69	68	5.1	1,030	7.6
Sept. 1-4 14-20--------	0	34		34	19	159		113	18	282		1.5		a634	.86	--	163	70	68	5.4	1,140	8.0
Sept. 21-30------------	0	30		33	19	158		110	18	280		1.5		a612	.83	--	160	70	68	5.4	1,120	8.1
Weighted average------	32.5	7.1		3.0	1.3	11		8	3.6	18		1.3		49	0.07	4.3	13	6	65	1.3	82.7	--

a Residue on evaporation at 180°C.
b Includes day of less than 0.05 second-foot flow.

NECHES RIVER AT EVADALE, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 96, 200 feet upstream from Gulf, Colorado & Santa Fe Railway bridge at Evadale, Jasper County, 600 feet downstream from Mill Creek, 15 miles upstream from Village Creek and at mile 55.
DRAINAGE AREA.--7,908 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1954.
Water temperatures: October 1947 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 188 ppm Sept. 1-10; minimum, 88 ppm May 18-31.
Hardness: Maximum, 61 ppm Sept. 1-10; minimum 25 ppm May 18-31.
Specific conductance: Maximum daily, 328 micromhos Aug. 28; minimum daily, 120 micromhos May 15.
Water temperatures: Maximum observed, 88°F July 13; minimum observed, 43°F Jan. 23.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 218 ppm Dec. 11-20, 1948; minimum, 36 ppm May 5-12, 26-27, 1953.
Hardness: Maximum, 70 ppm Nov. 1-10, 1947; minimum, 16 ppm Sept. 22-25, 27, 1950.
Specific conductance: Maximum daily, 415 micromhos Nov. 29, 1952; minimum daily, 49.3 micromhos May 9, 1953.
Water temperatures: Maximum observed 94°F June 29, 1953; minimum observed, 37°F Jan. 30-31, 1948, Jan. 31, 1949.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953-------	707	25		9.0	3.6	25		43	10	31	0.3	1.5		139	0.19	265	38	2	59	1.7	199	7.4
Oct. 11-20----------	306	28		10	4.0	25		49	9.9	30	.3	1.8		134	.18	111	42	2	57	1.7	202	7.4
Oct. 21-31----------	405	26		11	4.0	26		43	11	36	.2	1.8		147	.20	161	44	9	56	1.7	217	7.2
Nov. 1-10----------	432	26		10	4.4	28		42	9.8	41	.3	1.5		152	.21	177	43	8	59	1.9	229	7.3
Nov. 11-20----------	410	26		10	3.9	39		44	9.9	55	.3	1.0		174	.24	193	41	5	67	2.7	275	7.4
Nov. 21-30----------	442	24		9.0	3.7	42		44	11	56	.3	1.0		184	.25	220	38	2	71	3.0	280	7.3
Dec. 1-10----------	591	15		9.1	2.7	29		34	13	37	.4	1.2		154	.21	246	34	6	65	2.1	214	7.4
Dec. 11-20----------	815	15		7.9	2.5	26		34	12	32	.4	1.0		137	.19	301	30	2	66	2.1	187	7.0
Dec. 21-31----------	3,532	13		6.4	2.9	25		20	16	33	.5	1.0		138	.19	1,320	28	12	66	2.0	180	6.8
Jan. 1-10, 1954-------	2,414	16		7.3	3.1	25		18	16	37	.5	.8		a115	.16	750	30	16	64	2.0	203	7.1
Jan. 11-20----------	5,189	16		7.2	3.2	24		16	18	35	.5	.5		a112	.15	1,570	31	18	63	1.9	195	7.0
Jan. 21-31----------	3,495	14		7.0	3.0	19		17	18	26	.5	1.0		a96	.13	906	30	16	58	1.5	167	7.0
Feb. 1-10----------	3,233	18		8.6	4.1	26		19	24	37	.5	.8		a128	.17	1,120	38	23	59	1.8	214	7.1
Feb. 11-19----------	2,569	20		9.4	4.9	29		19	26	44	.5	1.0		165	.22	1,140	44	28	59	1.9	251	7.1
Feb. 20-28----------	2,030	18		9.6	4.7	28		20	26	42	.5	.8		159	.22	871	44	27	58	1.8	241	7.1
Mar. 1-10----------	2,319	17		10	4.9	30		23	26	44	.4	.5		165	.22	1,030	45	26	59	1.9	251	7.1
Mar. 11-20----------	1,782	16		10	4.9	32		26	27	45	.5	.8		165	.22	794	45	24	61	2.1	256	7.2
Mar. 21-31----------	1,143	16		10	4.5	30		28	23	42	.5	.5		158	.21	488	44	20	60	2.0	245	7.2
Apr. 1-10----------	1,660	17		10	4.7	33		28	26	46	.3	1.0		167	.23	748	44	22	62	2.2	264	7.0
Apr. 11-15, 21-22-----	3,561	15		10	4.4	33		29	24	45	.4	2.0		170	.23	1,630	43	19	63	2.2	265	7.1
Apr. 16-20, 23-30-----	3,981	13		7.9	4.1	21		25	16	31	.3	1.0		a106	.14	1,140	36	16	56	1.5	189	7.2
May 1-2, 7-11---------	7,436	20		8.0	3.0	23		24	15	31	.7	3.0		152	.21	3,050	32	13	61	1.8	190	7.2
May 3-6, 12-17--------	6,510	16		6.5	2.3	18		20	13	22	.7	2.2		a91	.12	1,600	26	9	60	1.5	140	7.0
May 18-31----------	7,512	16		6.2	2.3	17		17	14	21	.8	2.5		a88	.12	1,780	25	11	60	1.5	139	7.0
June 1-10----------	4,045	17		6.6	2.9	21		23	14	27	.7	1.5		127	.17	1,390	28	10	62	1.7	166	7.1
June 11-20----------	2,134	18		7.7	3.2	21		28	14	26	.7	1.5		130	.18	749	32	9	58	1.6	169	7.3
June 21-30----------	1,384	19		9.0	3.4	23		38	13	27	.7	1.0		132	.18	493	36	6	57	1.6	179	7.4
July 1-10----------	1,496	16		10	4.2	23		41	14	30	.5	1.0		137	.19	553	42	9	54	1.5	198	7.3
July 11-20----------	1,097	16		11	4.4	27		45	14	36	.5	1.2		145	.20	429	46	8	57	1.8	226	7.1
July 21-31----------	853	17		12	4.8	32		50	14	43	.5	1.2		159	.22	366	50	8	58	2.0	257	7.2
Aug. 1-10----------	379	22		12	4.4	31		51	13	41	.2	1.0		158	.21	162	48	6	58	1.9	251	7.5
Aug. 11-20----------	682	22		13	4.8	36		61	12	47	.2	.8		173	.24	319	52	2	60	2.2	284	7.4
Aug. 21-31----------	464	22		13	4.7	42		69	11	52	.2	1.0		187	.25	234	52	0	64	2.5	305	7.7
Sept. 1-10----------	255	28		15	5.7	36		81	8.6	44	.3	.8		188	.26	129	61	0	56	2.0	299	7.7
Sept. 11-20----------	277	26		15	5.2	36		85	7.5	41	.3	.8		181	.25	135	59	0	57	2.0	291	7.6
Sept. 21-30----------	204	24		15	5.2	39		91	7.4	43	.4	1.0		187	.25	103	59	0	59	2.2	303	7.5
Weighted average----	2,114	17		8.1	3.4	24		25	17	32	0.5	1.5		127	0.17	704	34	14	60	1.8	194	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN NECHES RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
NECHES RIVER AT STATE HIGHWAY 103 WEST OF LUFKIN																						
Dec. 18, 1953---------	--	20	0.39	7.7	4.6	23		27	21	31		1.0		146	0.20		38	16	57	0.8	184	6.9
WOLF CREEK 6 MILES NORTHWEST OF TOWN BLUFF																						
Sept. 13, 1954--------	19.7	19		4.1	.9	5.9		20	1.2	6.2		.5		53	.07		14	0	48	.7	55.8	6.7
RUSH CREEK 4½ MILES NORTHWEST OF TOWN BLUFF																						
Oct. 14, 1953---------	2.16	--		--	--	--		203	--	75		--		--	--		115	21	--	--	552	8.2
Sept. 3, 1954---------	1.24	32		--	--	95		225	2.9	103		.8		397	.54		126	0	62	3.7	675	7.7
SANDY CREEK ON COUNTY ROAD 10 MILES SOUTHWEST OF JASPER																						
Sept. 13, 1954--------	20.4	20		2.2	.6	5.0		10	2.0	5.0		1.8		46	.06		8	0	57	.8	66.9	6.4
VILLAGE CREEK AT U. S. HIGHWAY 69, 9 MILES NORTHWEST OF KOUNTZE																						
Oct. 15, 1953---------	18.8	--		--	--	--		19	--	8.0		--		--	--		7	0	--	--	57.7	6.9
Sept. 2, 1954---------	15.1	11		--	--	--		18	--	7.5		.2		--	--		15	3	--	--	63.5	6.6
HICKORY CREEK 3½ MILES WEST OF WARREN																						
Sept. 1, 1954---------	5.71	11		--	--	4.8		16	1.2	7.0		.2		49	.07		14	1	43	.6	53.1	6.6
HORSEPEN CREEK 9½ MILES WEST OF WOODVILLE																						
Oct. 15, 1953---------	1.68	--		--	--	--		18	--	8.5		--		--	--		9	0	--	--	56.3	7.4
Sept. 1, 1954---------	1.27	14		--	--	--		15	--	8.2		.2		--	--		13	1	--	--	53.6	6.5
HORSEPEN CREEK 9 MILES SOUTHWEST OF WOODVILLE																						
Oct. 15, 1953---------	7.57	--		--	--	--		12	--	7.5		--		--	--		5	0	--	--	45.1	7.3
Sept. 1, 1954---------	6.30	12		--	--	--		12	--	7.0		.2		--	--		10	0	--	--	44.6	6.6
HORSEPEN CREEK 3 MILES WEST OF WARREN																						
Sept. 1, 1954---------	7.34	13		--	--	--		12	--	6.8		.2		--	--		10	0	--	--	45.1	6.6
HICKORY CREEK AT U. S. HIGHWAY 69, 3½ MILES SOUTH OF WARREN																						
Sept. 2, 1954---------	12.7	12		--	--	5.0		14	1.3	6.8		.5		47	.06		12	1	47	.6	50.0	6.6
BIG TURKEY CREEK 6 MILES SOUTHEAST OF WARREN																						
Oct. 14, 1953---------	25.7	--		--	--	--		16	--	7.5		--		--	--		8	0	--	--	55.4	7.4
Sept. 2, 1954---------	17.9	14		--	--	--		18	--	7.8		.2		--	--		14	0	--	--	58.4	6.7

MISCELLANEOUS ANALYSES OF STREAMS IN NECHES RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
BEECH CREEK AT FARM TO MARKET ROAD 1013, 1 MILE WEST OF SPURGER																						
Oct. 14, 1953---------	0.89	--		--	--	--		11	--	6.2		--		--	--		4	0	--	--	43.3	7.2
Sept. 3, 1954---------	.06	9.6		--	--	--		11	--	6.0		0.5		--	--		10	1	--	--	41.0	6.3
BEECH CREEK 2½ MILES NORTHWEST OF FRED																						
Oct. 14, 1953---------	.37	--		--	--	--		9	--	7.2		--		--	--		2	0	--	--	39.9	7.0
Sept. 3, 1954---------	.23	9.8		--	--	--		8	--	7.5		.5		--	--		7	0	--	--	38.2	6.7
THEUVENINS CREEK 7 MILES SOUTHEAST OF WARREN																						
Oct. 14, 1953---------	5.94	19		16	6.1	313		9	1.2	522		1.5		939	1.28		65	58	91	17	1,700	6.6
Sept. 3, 1954---------	1.41	13		--	--	55		8	1.6	100		.5		204	.28		29	22	81	4.5	353	6.4
CYPRESS CREEK 1 MILE WEST OF KOUNTZE																						
Sept. 2, 1954---------	.20	1.9		--	--	65		82	3.2	62		.5		203	.28		18	0	89	6.6	339	7.1

TRINITY RIVER NEAR OAKWOOD, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 79 and 84, 1½ miles upstream from International-Great Northern Railroad Bridge, 6 miles northeast of Oakwood, Leon County, and at mile 313.
DRAINAGE AREA.--12,912 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1954 (discontinued).
Water temperatures: October 1947 to September 1954 (discontinued).
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,110 ppm Sept. 11; minimum, 236 ppm May 12, 15-22.
Hardness: Maximum, 274 ppm Sept. 11; minimum, 95 ppm Dec. 2, 4-6.
Specific conductance: Maximum daily, 3,700 micromhos Sept. 11; minimum daily, 326 micromhos Jan. 23, May 18.
Water temperatures: Maximum observed, 88°F July 26, Aug. 7; minimum observed, 45°F Jan. 23-24, Mar. 6.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 4,500 ppm Sept. 7, 1953; minimum, 165 ppm Feb. 11-19, 1950.
Hardness: Maximum, 365 ppm Sept. 7, 1953; minimum, 85 ppm May 15-23, 1953.
Specific conductance: Maximum daily, 7,820 micromhos Sept. 7, 1953; minimum daily, 198 micromhos May 17, 1953.
Water temperatures: Maximum observed, 90°F Aug. 14, 1952, June 13, 1953; minimum observed, freezing point Feb. 5, 1949, Dec. 15, 21-22, 1951.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1953--------	138	15		60	8.5	345		252	121	422		8.7		1,100	1.50	410	184	0	80	11	1,980	8.0
Oct. 11-20------------	176	24		66	10	397		311	160	445		25		1,280	1.74	608	206	0	81	12	2,210	7.9
Oct. 21-28------------	388	32		67	12	452		285	165	550		22		1,440	1.96	1,510	216	0	82	13	2,550	7.9
Oct. 29-30, Nov. 5-6---	1,372	14		40	5.1	126		139	57	152		10		482	.66	1,790	121	7	69	5.0	860	7.7
Oct. 31, Nov. 1-4, 7-9-	695	17		48	7.9	207		145	97	258		23		744	1.01	1,400	152	34	75	7.3	1,300	7.5
Nov. 10, 22-24---------	921	13		44	8.1	304		130	51	452		9.9		947	1.29	2,350	144	37	82	11	1,770	7.7
Nov. 11-13, 25-26, 28-30----------	473	16		44	6.6	139		158	90	145		14		a533	.72	681	137	8	69	5.2	943	7.4
Nov. 14-21, 27---------	391	17		49	7.6	214		169	84	268		18		746	1.01	788	154	15	75	7.5	1,340	7.7
Dec. 1, 3, 7-18 23-----	1,980	15		54	11	246		154	101	330		21		883	1.20	4,720	180	54	75	8.0	1,550	7.7
Dec. 2, 4-6------------	4,845	9.2		30	5.0	54		102	28	68		4.2		280	.38	3,660	95	12	55	2.4	466	7.7
Dec. 19-22, 24-25------	585	17		55	12	456		183	81	658		18		1,390	1.89	2,200	186	36	84	15	2,550	7.8
Dec. 26-31-------------	385	16		43	7.9	186		143	98	222		15		687	.93	714	140	23	74	6.8	1,170	7.5
Jan. 1-9, 1954---------	393	20		46	8.2	195		148	108	230		17		702	.95	745	148	27	74	7.0	1,230	7.5
Jan. 10-15, 17-20------	2,731	15		46	6.3	78		132	68	87		12		392	.53	2,890	141	33	55	2.9	669	7.7
Jan. 16, 23-25---------	2,342	15		36	4.8	40		109	37	46		6.1		260	.35	1,640	110	20	45	1.7	420	8.0
Jan. 21-22, 26-31------	2,120	14		49	6.3	95		138	76	108		13		442	.60	2,530	148	36	58	3.4	758	7.5
Feb. 1-9---------------	826	14		48	6.4	95		132	83	105		14		459	.62	1,020	146	38	59	3.4	751	7.9
Feb. 10-20-------------	391	13		55	7.8	197		150	102	252		17		726	.99	766	169	46	72	6.6	1,260	7.8
Feb. 21-24-------------	742	15		59	10	221		183	138	250		28		860	1.17	1,720	188	38	72	7.0	1,420	8.0
Feb. 25-28, Mar. 1-----	540	14		37	7.0	126		122	78	146		12		509	.69	742	122	22	69	5.0	834	7.9
Mar. 2, 6, 9-10, 18, 21-22, 26, 30-31------	327	12		64	11	428		173	124	598		25		1,350	1.84	1,190	204	62	82	13	2,430	7.9
Mar. 3, 5, 7-8, 11-17, 27-29----------	315	13		50	9.0	199		169	125	218		24		750	1.02	638	162	24	73	6.8	1,280	7.9
Mar. 4, 19-20, 23-25---	314	14		52	8.5	260		181	135	298		25		900	1.22	763	164	16	77	8.8	1,550	7.9
Apr. 1-6, 10-13--------	457	18		52	10	267		189	149	298		25		924	1.26	1,140	170	16	77	8.9	1,560	8.0
Apr. 7-9---------------	295	17		54	11	347		192	155	422		25		1,120	1.52	892	180	22	81	11	1,950	8.0
Apr. 14-15, 19, 21-30--	707	14		44	6.4	79		136	56	94		6.0		384	.52	733	136	25	56	2.9	637	7.7
Apr. 16-18, 20---------	2,798	14		47	6.3	144		156	93	156		13		562	.76	4,250	144	22	68	5.2	948	7.9
May 1, 8-11, 13--------	1,431	20		42	4.8	129		141	60	157		6.6		493	.67	1,900	124	9	69	5.0	880	8.0
May 2-3, 5-7-----------	1,417	22		57	5.9	198		163	84	260		12		730	.99	2,790	166	33	72	6.7	1,320	8.2
May 4, 14, 23-31-------	1,443	20		52	4.8	84		154	63	95		6.6		406	.55	1,580	149	23	55	3.0	702	8.1
May 12, 15-22----------	7,526	17		40	2.8	34		121	36	31		7.0		236	.32	4,800	111	12	40	1.4	388	7.9
June 1-6, 9, 11--------	401	21		66	6.1	151		196	94	178		10		631	.86	683	190	29	63	4.8	1,090	8.2
June 7-8, 10, 12, 14-20----------	312	11		62	6.6	221		204	110	265		9.9		810	1.10	682	182	14	73	7.1	1,420	7.8
June 13----------------	242	16		78	9.0	430		b208	103	625		10		1,370	1.86	895	232	61	80	12	2,510	8.4
June 21-30-------------	307	14		66	6.9	219		218	161	220		16		859	1.17	712	193	14	71	6.9	1,410	8.0
July 1-10--------------	184	14		67	8.1	208		198	102	270		4.2		791	1.08	393	200	38	69	6.4	1,390	8.2
July 11-20-------------	182	17		69	7.9	259		c248	171	270		7.5		953	1.30	468	204	2	73	7.9	1,590	8.4
July 21-31-------------	266	19		60	8.8	266		d257	176	255		12		927	1.26	666	186	0	76	8.5	1,540	8.4

TRINITY RIVER NEAR OAKWOOD, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Aug. 1-4, 14-20, 1954--	250	16		64	7.0	226		240	104	262		7.2		832	1.13	562	188	0	72	7.2	1,410	8.2
Aug. 5-13----------	243	14		59	5.6	144		229	79	149		5.6		586	.80	384	170	0	65	4.8	994	8.2
Aug. 21-31----------	168	18		64	8.1	332		c260	144	388		5.0		1,090	1.48	494	193	0	79	10	1,910	8.3
Sept. 1-10, 12-30------	136	22		62	9.1	393		261	209	432		6.0		1,260	1.71	463	192	0	82	12	2,180	8.2
Sept. 11----------	140	18		87	14	697		d263	187	975		6.5		2,110	2.87	798	274	58	85	18	3,700	8.3
Weighted average	871	16		47	6.3	137		149	75	165		12		547	0.74	1,290	144	22	67	5.0	944	--

a Sum of determined constituents.
b Includes equivalent of 3 ppm carbonate (CO_3).
c Includes equivalent of 4 ppm carbonate (CO_3).
d Includes equivalent of 5 ppm carbonate (CO_3).

TRINITY RIVER AT ROMAYOR, TEX.

LOCATION.--At gaging station at bridge on State Highway 105, 1.9 miles south of Romayor, Liberty County, 2.0 miles downstream from Gulf, Colorado & Santa Fe Railway bridge and at mile 94.
DRAINAGE AREA.--17,192 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to November 1949, February 1950 to September 1951, April 1953 to September 1954.
Water temperatures: February 1950 to September 1951, April 1953 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,900 ppm Nov. 7; minimum, 82 ppm July 31.
Hardness: Maximum, 228 ppm Nov. 7; minimum, 32 ppm Nov. 1-3.
Specific conductance: Maximum daily, 3,170 micromhos Nov. 7; minimum daily, 108 micromhos Nov. 2.
Water temperatures: Maximum observed, 93°F June 30, July 16-17; minimum observed, 40°F Dec. 27, Jan. 1.
EXTREMES, 1945-50, 1953-54.--Dissolved solids: Maximum, 1,900 ppm Nov. 7, 1953; minimum, 82 ppm July 31, 1954.
Hardness: Maximum, 242 ppm Sept. 28-30, 1953; minimum, 32 ppm Nov. 1-3, 1953.
Specific conductance: Maximum daily, 3,170 micromhos Nov. 7, 1953; minimum daily, 103 micromhos Nov. 9, 1946.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-3, 1953---------	268	17		59	6.7	329		225	78	442		1.8		1,040	1.41	753	174	0	80	11	1,820	8.2
Oct. 4-8, 28-30--------	1,204	18		48	5.2	155		182	59	190		.8		a565	.77	1,840	142	0	70	5.7	980	8.2
Oct. 9-27, 31----------	404	20		46	4.8	103		170	39	126		1.2		430	.58	469	134	0	62	3.9	739	8.1
Nov. 1-3---------------	2,310	7.8		10	1.6	19		35	14	20		1.2		a91	.12	568	32	3	56	1.4	159	7.5
Nov. 4, 9, 21-27-------	1,238	15		44	5.6	170		145	73	212		11		609	.83	2,040	133	14	74	6.4	1,060	7.8
Nov. 5-6, 8------------	1,460	17		56	7.9	388		206	109	512		15		1,210	1.65	4,770	172	3	83	13	2,120	7.9
Nov. 7-----------------	1,250	28		70	13	628		216	136	892		22		1,900	2.58	6,410	228	51	86	18	3,170	8.2
Nov. 10-15, 19-20------	861	16		36	3.7	103		134	52	111		9.3		414	.56	962	105	0	68	4.4	694	7.8
Nov. 16-18, 28-30------	935	14		27	4.3	70		97	40	79		6.8		317	.43	800	85	6	64	3.3	508	7.6
Dec. 1-4, 9, 20--------	3,547	14		39	5.1	134		111	46	189		5.8		516	.70	4,940	118	28	71	5.4	898	7.5
Dec. 5-8, 10-19, 21, 31	5,029	12		26	3.7	47		76	31	60		4.2		267	.36	3,630	80	18	56	2.3	396	7.4
Dec. 22-30-------------	3,770	10		15	2.6	21		47	19	24		1.8		187	.25	1,900	48	10	49	1.3	209	7.1
Jan. 1-10, 18-20, 22, 24, 1954--------------	2,379	21		33	4.9	77		88	45	105		4.5		356	.48	2,290	102	30	62	3.3	579	7.4
Jan. 11-17-------------	1,946	21		28	3.7	60		87	26	82		3.0		272	.37	1,430	85	14	61	2.9	449	7.3
Jan. 21----------------	6,420	21		--	--	202		132	84	262		14		716	.97	12,410	137	29	76	7.5	1,240	8.1
Jan. 23, 25-31---------	3,176	19		33	3.7	40		105	37	39		5.8		246	.33	2,110	98	12	47	1.8	375	7.6
Feb. 1-4, 21-26--------	1,342	24		36	6.4	49		102	41	67		3.8		302	.41	1,090	116	33	48	2.0	489	7.9
Feb. 5-13--------------	1,226	32		45	6.8	91		126	65	114		7.2		438	.60	1,450	140	38	58	3.3	731	7.9
Feb. 14-20, 27---------	998	32		48	6.6	98		137	68	121		7.7		462	.63	1,240	147	34	59	3.5	768	7.9
Feb. 28, Mar. 2-8, 13-14----------	858	19		48	6.9	132		131	71	178		4.8		534	.73	1,240	148	41	66	4.7	938	7.9
Mar. 1, 9-12, 25, 28-31	729	15		54	7.6	177		150	78	242		5.0		671	.91	1,320	166	26	70	6.0	1,200	8.0
Mar. 15-24, 26-27------	648	21		46	7.0	123		137	60	166		4.0		500	.68	875	144	32	65	4.5	880	8.0
Apr. 1-10, 19-20-------	903	14		51	8.3	167		156	84	216		6.5		630	.86	1,540	161	33	69	5.7	1,110	7.9
Apr. 11, 17, 26-30-----	1,003	12		39	5.4	75		119	47	93		5.6		345	.47	934	120	22	58	3.0	596	7.8
Apr. 12-16, 18, 21-25--	1,654	11		40	6.6	124		130	68	150		8.2		483	.66	2,160	127	20	68	4.8	845	7.8
May 1-4, 9, 17-20------	6,163	15		33	4.5	48		102	30	62		4.1		274	.37	4,560	101	18	51	2.1	448	7.5
May 5-8, 13-16---------	9,371	9.8		17	2.8	25		71	5.0	32		0.0		a127	.17	3,210	54	0	50	1.5	238	6.2
May 10-12--------------	2,500	16		43	7.0	135		118	60	190		4.5		526	.72	3,550	136	40	68	5.0	936	7.9
May 21-31--------------	5,036	16		37	4.3	29		108	34	32		4.1		238	.32	3,240	110	22	36	1.2	364	7.6
June 1-11--------------	936	26		49	6.3	49		149	42	61		2.8		338	.46	854	148	26	42	1.7	525	8.0
June 12-25-------------	605	19		55	7.5	93		158	53	130		1.8		468	.64	764	168	38	55	3.1	778	8.0
June 26-30-------------	738	11		54	7.4	140		161	76	182		2.0		601	.82	1,200	165	33	65	4.7	994	8.0
July 1-10--------------	314	13		60	8.0	173		164	82	238		3.0		669	.91	567	182	48	67	5.6	1,200	7.9
July 11-20-------------	254	14		49	8.3	213		163	75	288		4.0		743	1.01	510	156	23	75	7.4	1,360	7.9
July 21-30-------------	544	14		51	7.4	177		181	92	210		2.0		647	.88	950	158	9	71	6.1	1,160	7.9
July 31----------------	4,400	6.4		--	--	--		41	--	21		2.8		82	.11	974	36	2	--	--	154	7.6

TRINITY RIVER AT ROMAYOR, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Aug. 1-4, 1954	1,918	9.0		24	2.2	63		84	28	76		2.2		263	0.36	1,360	69	0	67	3.3	454	7.5
Aug. 5-10	670	15		52	5.1	147		167	50	198		1.0		558	.76	1,010	150	14	68	5.2	1,010	7.8
Aug. 11-20	333	19		67	7.4	228		237	122	262		2.5		867	1.18	780	198	4	71	7.0	1,440	8.0
Aug. 21-31	186	14		58	7.2	196		221	105	218		1.5		a709	.96	356	174	0	71	6.4	1,260	7.9
Sept. 1-10	247	15		59	7.5	205		236	100	230		1.8		739	1.01	493	178	0	71	6.7	1,310	8.2
Sept. 11-20	201	20		62	7.0	158		245	70	178		1.5		617	.84	335	184	0	65	5.1	1,100	8.2
Sept. 21-30	194	20		64	7.0	150		247	53	182		1.2		600	.82	314	188	0	63	4.8	1,090	8.1
Weighted average	1,694	15		34	4.7	75		105	40	95		4.0		342	0.47	1,560	104	18	61	3.2	568	--

a Sum of determined constituents.

TRINITY RIVER NEAR MOSS BLUFF, TEX.

LOCATION.--At Devers Pumping Plant Number One, one mile west of Moss Bluff, Liberty County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during summers of 1946 to 1949, daily records October 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,830 ppm Aug. 21-31; minimum, 157 ppm Nov. 13-14.
Hardness: Maximum, 416 ppm Aug. 21-31, minimum, 41 ppm Nov. 13-14.
Specific conductance: Maximum daily, 4,090 micromhos Aug. 22; minimum daily, 167 micromhos May 16.
EXTREMES, 1949-54.--Dissolved solids: Maximum, 3,640 ppm Aug. 26-27, 1952; minimum, 110 ppm Oct. 4-10, 1949.
Hardness: Maximum, 782 ppm Aug. 26-27, 1952; minimum, 41 ppm Nov. 13-14, 1953.
Specific conductance: Maximum daily, 7,630 micromhos Aug. 27, 1952; minimum daily, 127 micromhos Oct. 7, 1949.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-4, 13-18, 1953--		18		65	9.2	209		240	70	272		2.0		781	1.06		200	0	69	6.4	1,380	8.2
Oct. 5-12----------		17		86	11	313		259	68	465		1.8		1,090	1.48		260	0	72	8.4	2,000	8.2
Oct. 19-31----------		23		54	5.8	101		199	35	125		1.5		460	.63		158	0	58	3.5	778	7.7
Nov. 1-12----------		14		34	5.1	106		127	45	129		3.8		425	.58		106	2	68	4.5	722	7.4
Nov. 13-14----------		10		--	--	25		44	16	29		1.5		157	.21		41	5	57	1.7	203	7.3
Nov. 15-25----------		18		39	4.9	96		139	45	113		7.8		398	.54		118	4	64	3.9	694	7.5
Nov. 26-30----------		19		51	7.6	181		136	66	258		8.2		a658	.89		158	46	71	6.2	1,200	7.4
Dec. 1-2, 9-16---------		12		28	2.2	44		82	24	56		4.4		250	.34		79	12	55	2.1	382	7.3
Dec. 3-8----------		15		40	3.9	154		110	44	220		5.5		574	.78		116	26	74	6.2	975	7.2
Dec. 17-31----------		12		16	1.7	23		45	17	29		2.2		191	.26		47	10	52	1.5	217	7.3
Jan. 1-2, 1954---------		19		--	--	30		61	18	42		1.5		187	.25		63	13	51	1.7	278	8.0
Jan. 11-21----------		21		27	5.1	65		78	34	90		4.0		310	.42		88	24	62	3.0	497	7.4
Jan. 22----------		23		--	--	192		132	80	248		15		708	.96		136	28	75	7.2	1,190	8.2
Jan. 23-31----------		18		35	3.8	42		101	36	49		5.9		249	.34		103	20	47	1.8	405	7.4
Feb. 1-5, 7-8----------		15		38	5.2	54		105	40	73		4.5		304	.41		116	30	50	2.2	507	7.7
Feb. 6, 9-16----------		18		48	6.9	95		129	58	131		6.3		448	.61		148	43	58	3.4	762	7.2
Feb. 17-28----------		15		43	6.6	58		114	46	83		3.2		336	.46		134	41	48	2.2	568	7.2
Mar. 1-3, 12-20, 29-31-		12		56	11	157		164	73	220		5.4		636	.86		184	50	65	5.0	1,120	8.0
Mar. 7-11, 21-28-------		12		51	8.3	105		149	56	146		2.5		468	.64		161	39	59	3.6	822	7.9
Apr. 1-9, 13-14, 23----		12		55	8.0	167		162	68	233		2.0		636	.86		170	38	68	5.6	1,130	7.8
Apr. 10-12, 15, 22, 24-30----------		15		46	5.9	133		148	72	161		7.2		523	.71		140	18	68	4.9	919	7.9
Apr. 16-21----------		10		30	3.8	78		90	35	105		2.5		318	.43		90	17	65	3.6	565	7.6
May 1-5, 12-13, 17-----		17		38	5.2	60		114	32	82		4.2		312	.42		116	23	53	2.4	536	7.8
May 6-11, 14-16, 18-21-		14		20	4.8	23		65	20	29		4.5		199	.27		70	16	41	1.2	262	7.7
May 22-31----------		19		40	4.8	34		116	33	42		5.2		250	.34		120	24	38	1.3	410	8.0
June 1-6, 8, 11, 14-15, 17----------		19		48	6.3	46		143	36	63		2.8		308	.42		146	28	41	1.7	512	8.0
June 7, 9-10, 12-13, 16, 18-20----------		20		59	7.1	66		174	42	93		2.0		388	.53		176	34	45	2.1	663	8.2
June 21-30----------		15		50	6.6	88		140	46	126		3.2		410	.56		152	38	56	3.1	735	7.9
July 1-5, 7, 10, 14-18-		16		66	13	223		171	85	335		2.0		839	1.14		218	78	69	6.5	1,500	7.8
July 6, 8, 29-31-------		15		33	3.5	77		110	48	86		4.5		334	.45		97	7	63	3.4	566	8.0
July 9, 11-13, 19-28---		16		69	25	337		180	100	535		2.0		1,170	1.59		275	128	73	8.8	2,210	7.7
Aug. 1, 5-10----------		13		29	3.6	62		89	31	82		1.8		279	.38		87	14	61	2.9	482	7.6
Aug. 2-4----------		8.4		17	2.3	36		54	22	44		1.8		163	.22		52	8	60	2.2	280	6.9
Aug. 11-20----------		17		58	6.8	133		176	47	190		1.2		550	.75		172	28	63	4.4	982	7.4
Aug. 21-31----------		15		78	54	535		200	166	880		2.8		1,830	2.49		416	252	74	11	3,310	7.6
Sept. 1-13----------		19		76	38	418		218	140	658		3.8		1,460	1.99		346	167	72	9.8	2,650	7.8
Sept. 14-25----------		18		66	11	215		247	95	265		2.0		807	1.10		210	7	69	6.4	1,400	7.9
Sept. 26-30----------		17		65	8.8	167		247	70	200		3.8		678	.92		198	0	65	5.2	1,180	7.8

a Sum of determined constituents.

OLD RIVER NEAR COVE, TEX.

LOCATION.--At Barber Hill Pumping Plant, 5 miles northeast of Cove, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during summers of 1946 to 1949, daily records October 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 9,140 ppm Aug. 31; minimum, 184 ppm Dec. 19-26, 30-31.
Hardness: Maximum, 1,780 ppm Aug. 31; minimum, 63 ppm Dec. 19-26, 30-31.
Specific conductance: Maximum daily, 14,900 micromhos Aug. 31; minimum daily, 223 micromhos Dec. 21.
EXTREMES, 1949-54.--Dissolved solids: Maximum, 9,140 ppm Aug. 31, 1954; minimum, 156 ppm Jan. 26-31, Apr. 21-30, 1952.
Hardness: Maximum, 1,780 ppm Aug. 31, 1954; minimum, 57 ppm Jan. 26-31, 1952.
Specific conductance: Maximum daily, 14,900 micromhos Aug. 31, 1954; minimum daily, 223 micromhos Dec. 21, 1953.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953-------		--		--	--	--		--	--	770		--		--	--		--	--	--	--	2,830	--
Oct. 11-16------------		--		--	--	--		--	--	760		--		--	--		--	--	--	--	2,820	--
Oct. 21-31------------		--		--	--	--		--	--	286		--		--	--		--	--	--	--	1,190	--
Nov. 1-10-------------		--		--	--	--		--	--	132		--		--	--		--	--	--	--	703	--
Nov. 11-20------------		15		46	7.0	88		114	57	129		0.2		420	0.57		144	50	57	3.2	709	7.8
Nov. 21-30------------		9.6		21	5.1	57		73	24	79		.2		248	.34		73	14	63	2.9	423	7.4
Dec. 1-10-------------		15		23	4.6	39		80	18	54		1.8		225	.31		76	11	53	2.0	352	7.2
Dec. 11-18------------		17		26	2.6	43		87	16	56		1.8		234	.32		76	4	55	2.1	359	7.3
Dec. 19-26, 30-31-----		13		20	3.1	28		66	13	38		1.5		184	.25		63	9	49	1.5	267	7.2
Dec. 27-29------------		11		32	7.6	75		94	27	118		2.2		353	.48		111	34	59	3.1	606	7.4
Jan. 1-10, 1954-------		17		28	3.7	37		93	15	51		2.2		218	.30		85	9	49	1.7	349	7.6
Jan. 11-21------------		17		24	3.3	32		84	13	42		2.5		201	.27		73	5	49	1.6	298	7.6
Jan. 22-31------------		17		36	4.5	44		123	14	62		1.0		259	.35		108	8	47	1.8	425	7.4
Feb. 1-7--------------		15		38	5.8	46		129	13	70		1.5		284	.39		119	13	46	1.8	468	7.6
Feb. 8-17-------------		16		43	6.8	51		144	14	80		1.2		314	.43		135	17	45	1.9	521	7.6
Feb. 18-28------------		14		46	7.1	60		154	20	89		1.8		338	.46		144	18	47	2.2	573	7.6
Mar. 1-12-------------		13		54	7.6	67		170	26	102		2.0		382	.52		166	26	47	2.3	637	7.9
Mar. 13-24, 31--------		6.6		57	9.3	122		153	55	185		1.0		542	.74		180	54	60	4.0	941	7.7
Mar. 25, 27-30--------		7.6		59	14	153		153	51	252		4.5		675	.92		204	79	62	4.7	1,180	7.8
Mar. 26---------------		7.0		85	79	685		145	202	1,200		7.0		2,340	3.18		537	418	74	13	4,170	8.0
Apr. 1-14-------------		24		59	12	164		168	59	250		2.5		687	.93		196	59	64	5.1	1,200	8.2
Apr. 15-25------------		17		21	3.0	36		60	26	45		3.0		200	.27		65	16	54	1.9	312	7.5
Apr. 26-30------------		17		40	6.7	120		130	64	150		6.0		486	.66		128	21	67	4.6	833	8.1
May 1-2, 5-11, 17-----		20		42	6.9	109		127	55	146		5.0		465	.63		134	30	64	4.1	821	7.8
May 3-4, 12-16, 18----		21		34	4.7	63		100	35	85		3.0		309	.42		104	22	57	2.7	524	7.9
May 19-31-------------		17		32	4.9	45		108	32	52		4.2		256	.35		100	12	50	2.0	421	7.8
June 1-10-------------		24		38	6.0	52		131	30	65		3.0		292	.40		119	12	49	2.1	487	8.1
June 11-20, 24--------		19		52	13	150		147	56	232		2.8		607	.83		183	62	64	4.8	1,090	7.8
June 21-23, 25-27, 30-		18		78	13	319		144	111	500		2.5		1,110	1.51		248	130	74	8.8	2,010	8.0
June 28-29------------		19		98	17	501		145	162	790		2.5		1,660	2.26		314	196	78	12	2,950	7.9
July 1-3, 30----------		20		68	13	207		154	70	335		2.8		812	1.10		223	97	67	6.0	1,460	8.0
July 4-6, 21, 26------		23		93	31	494		161	152	810		2.8		1,680	2.28		360	228	75	11	3,050	8.1
July 7-8--------------		20		108	55	805		134	235	1,340		2.5		2,630	3.58		496	386	78	16	4,690	7.9
July 9-13, 17-19, 22--		16		115	107	1,080		144	287	1,880		3.0		3,560	4.84		727	609	76	17	6,280	7.9
July 14-16------------		15		141	225	2,020		128	515	3,570		--		6,550	8.91		1,280	1,170	77	25	11,100	7.9
July 20, 23-25, 27-29-		17		98	56	578		169	161	1,010		2.0		2,000	2.72		475	336	73	12	3,680	8.0
July 31, Aug. 1, 9-10-		14		38	8.8	123		95	38	198		1.8		481	.65		131	53	67	4.7	877	7.6

OLD RIVER NEAR COVE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Aug. 2, 6-8, 1954		15		51	14	177		102	53	305		2.0		725	0.99		184	101	68	5.7	1,270	7.8
Aug. 3-5		18		77	35	387		119	115	680		1.8		1,370	1.86		336	238	71	9.2	2,520	7.7
Aug. 11-17		16		44	26	262		97	71	448		2.0		934	1.27		217	138	72	7.8	1,710	7.5
Aug. 18-30		13		97	137	1,190		112	307	2,120		--		3,920	5.33		806	714	76	18	6,970	7.5
Aug. 31		12		164	334	2,830		122	707	5,030		--		9,140	12.43		1,780	1,680	78	29	14,900	7.8
Sept. 1-10		16		103	103	953		168	248	1,670		2.5		3,180	4.32		680	543	75	16	5,620	7.6
Sept. 11-13, 19-21, 28-Sept. 14, 22, 24, 26-27 29-30		19		116	103	967		198	258	1,690		2.0		3,250	4.42		713	551	75	16	5,760	8.0
		20		102	55	581		217	160	990		2.2		2,020	2.75		480	302	72	12	3,620	8.1
Sept. 15-18, 23, 25		15		62	21	242		144	74	405		1.5		932	1.27		241	123	69	6.8	1,650	7.8

TRINITY RIVER AT ANAHUAC, TEX.

LOCATION.--At Lone Star Pumping Plant in Anahuac, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during summers of 1946 to 1949, daily records December 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 18,000 ppm Sept. 11-20; minimum, 167 ppm Aug. 1, 3.
Hardness: Maximum, 3,440 ppm Sept. 11-20; minimum, 55 ppm Aug. 1, 3.
Specific conductance: Maximum daily, 30,200 micromhos Sept. 17-18; minimum daily, 246 micromhos May 16.
EXTREMES, 1949-54.--Dissolved solids: Maximum, 18,000 ppm Sept. 11-20, 1954; minimum, 167 ppm Aug. 1, 3, 1954.
Hardness: Maximum, 3,550 ppm Oct. 21-31, 1952, minimum, 52 ppm Dec. 25-31, 1949.
Specific conductance: Maximum daily, 30,200 micromhos Sept. 17-18, 1954; minimum daily, 210 micromhos May 5, 1953.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-2, 4-5, 12-18, 22, 24, 1953		16		105	109	1,070		187	307	1,820		2.5		3,520	4.79		710	557	77	17	6,280	8.2
Oct. 3, 6-11, 27, 29		18		91	58	663		186	207	1,090		2.0		2,220	3.02		466	156	76	13	3,970	7.9
Oct. 19-21, 23, 25-26, 28		13		165	301	2,580		173	649	4,560		--		8,350	11.36		1,650	1,360	77	28	13,900	7.8
Oct. 30-31, Nov. 1-2		18		54	9.6	180		180	71	242		1.8		674	.92		174	26	69	5.9	1,200	8.1
Nov. 3-10		12		28	8.4	95		103	27	140		1.2		382	.52		104	20	66	4.0	688	7.8
Nov. 11, 13-14, 22-23, 26-30		16		38	7.0	131		125	51	178		4.0		497	.68		124	22	70	5.1	897	7.9
Nov. 12		14		77	127	1,120		120	289	1,950		--		3,640	4.95		714	616	77	18	6,900	8.2
Nov. 15-17, 20-21, 24-25		17		43	9.9	226		136	68	320		6.1		773	1.05		148	36	77	8.1	1,400	7.8
Nov. 18-19		--		55	22	523		178	118	770		12		1,620	2.20		228	82	83	15	2,790	8.2
Dec. 1, 5, 7-25		11		29	8.7	115		109	39	160		2.2		453	.62		108	19	70	4.8	800	7.7
Dec. 2, 4, 6		12		47	28	294		142	91	465		5.5		1,010	1.37		232	116	73	8.3	1,880	7.9
Dec. 3		12		69	90	820		145	218	1,400		7.0		2,690	3.66		542	423	77	15	4,740	7.9
Dec. 26-31		11		20	4.9	66		58	21	101		1.2		316	.43		70	22	67	3.4	477	7.2
Jan. 1-10, 1954		10		23	7.4	72		75	27	109		1.8		319	.43		88	26	64	3.4	554	7.6
Jan. 11-20		12		25	6.3	68		73	25	105		2.0		310	.42		88	28	62	3.1	538	7.7
Jan. 21-31		11		30	8.1	85		116	36	111		4.3		360	.49		108	14	63	3.5	648	7.9
Feb. 1-9, 11-12		16		34	6.9	75		95	37	112		3.5		362	.49		114	36	59	3.1	620	7.4
Feb. 10, 13-18, 21-22, 24-27		15		53	11	162		129	80	238		6.6		663	.90		177	72	67	5.3	1,160	7.2
Feb. 19, 23		--		61	22	253		145	98	402		6.8		999	1.36		242	124	69	7.0	1,660	7.8
Feb. 20		--		66	49	454		131	142	775		6.1		1,570	2.14		366	258	73	10	2,810	7.7
Mar. 1-9, 14-15		18		52	15	207		124	79	322		4.5		781	1.06		191	90	70	6.5	1,400	8.2
Mar. 10-13, 16-17, 19-20, 24, 28		13		73	35	497		142	144	770		4.0		1,610	2.19		276	160	80	13	2,880	8.2
Mar. 18, 21-23, 25-27, 29-31		12		90	79	844		159	239	1,420		4.0		2,770	3.77		550	419	77	16	4,980	8.2
Apr. 1, 12-15		11		90	63	798		161	212	1,320		4.5		2,580	3.51		484	352	78	16	4,630	8.2
Apr. 2, 9, 11		9.6		122	161	1,580		154	414	2,720		--		5,080	6.91		966	840	78	22	8,880	8.0
Apr. 3-4, 6, 8, 10, 29		14		154	307	2,650		145	680	4,660		--		8,540	11.61		1,650	1,530	78	28	14,300	8.0
Apr. 5, 7		14		216	567	4,700		136	1,180	8,330		--		15,100	20.54		2,870	2,760	78	38	23,300	8.1
Apr. 16-17, 23-25, 27-28		13		45	13	227		123	93	322		7.8		817	1.11		166	65	75	7.6	1,450	8.0
Apr. 18-22, 26		16		34	4.9	120		95	51	156		.8		489	.66		105	27	71	5.1	820	8.0
May 2		24		122	237	1,980		137	544	3,470		--		6,440	8.76		1,280	1,170	77	24	11,100	8.1
May 3-4, 15-17		15		32	15	160		80	58	255		5.1		619	.84		142	76	71	5.9	1,100	7.8
May 5-6, 11-14		19		40	9.6	137		94	58	210		4.8		533	.72		140	62	68	5.0	966	7.9
May 7-10, 18-31		17		35	4.0	55		99	36	72		4.5		292	.40		104	23	54	2.4	491	7.9
June 1, 3-4		18		42	7.9	124		114	47	185		3.0		491	.67		138	44	66	4.6	872	7.8
June 2, 5-14		17		61	39	431		124	123	722		3.2		1,460	1.99		312	211	75	11	2,660	7.8
June 15-16		13		108	168	1,560		124	397	2,720		--		5,030	6.84		960	859	78	21.9	8,670	7.8
June 17-30		14		147	296	2,510		125	647	4,440		--		8,120	11.04		1,580	1,480	77	27	13,500	7.5
July 1-13		11		182	388	3,380		129	832	5,970		--		10,800	14.69		2,050	1,940	78	32	17,400	7.9
July 21-31		8.6		240	559	4,650		135	1,150	8,290		--		15,000	20.40		2,900	2,790	78	38	23,400	7.8

TRINITY RIVER AT ANAHUAC, TEX.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Aug. 1, 3, 1954--------		12		16	3.7	32		50	13	49		1.2		167	0.23		55	14	56	1.9	265	7.6
Aug. 2, 4----------		16		24	9.6	99		63	35	160		1.2		396	.54		100	48	68	4.3	700	7.7
Aug. 5-6----------		17		34	30	285		78	83	480		2.0		974	1.32		208	144	75	8.6	1,820	7.7
Aug. 7-10----------		19		88	157	1,320		98	348	2,330		--		4,310	5.86		865	784	77	19	7,690	7.8
Aug. 11-19----------		12		173	389	3,320		120	823	5,880		--		10,700	14.55		2,030	1,930	78	32	17,200	7.5
Aug. 20-31----------		11		263	626	5,220		132	1,300	9,300		--		16,800	22.85		3,230	3,120	78	40	25,700	7.4
Sept. 1-10----------		14		248	583	4,830		137	1,190	8,630		--		15,600	21.22		3,020	2,900	78	38	24,300	7.6
Sept. 11-20----------		13		271	673	5,620		138	1,380	10,000		--		18,000	24.48		3,440	3,330	78	42	27,400	7.6
Sept. 21-30----------		11		260	588	4,960		148	1,230	8,820		--		15,900	21.62		3,070	2,940	78	39	24,700	7.6

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.

LOCATION.--At four sampling stations in Trinity Bay opposite mouth of Trinity River, near Anahuac, Chambers County. Station 2 - In Anahuac Channel immediately below delta. Station 3 - In Anahuac Channel about 1½ miles southwest of Station 2. Station 6 - In Anahuac Channel at south end. Station 7 - In Trinity Bay about 1½ miles west of Station 6.
RECORDS AVAILABLE.--Chemical analyses: Bi-weekly October 1950 to September 1954.

Specific conductance (micromhos at 25°C) and chloride in parts per million, water year October 1953 to September 1954

Station Number	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride
	Oct. 2, 1953		Oct. 21, 1953		Nov. 18, 1953		Jan. 13, 1954		Mar. 10, 1954		Apr. 14, 1954		May 3, 1954	
2	10,100	3,220	21,700	7,770	20,200	7,200	736	144	2,650	688	10,600	3,300	3,140	810
3	11,100	3,620	21,900	7,870	22,000	7,940	739	144	2,550	660	10,600	3,320	3,120	840
6	13,200	4,360	23,100	8,380	25,200	9,220	745	145	2,330	590	18,800	6,370	3,100	820
7	15,700	5,280	23,300	8,430	25,200	9,220	796	163	2,340	595	17,500	5,850	3,110	830
	Oct. 5, 1953		Oct. 23, 1953		Nov. 25, 1953		Jan. 20, 1954		Mar. 17, 1954		Apr. 16, 1954		May 5, 1954	
2	9,530	3,020	22,000	7,750	1,070	210	566	112	13,000	4,190	2,020	510	1,140	238
3	13,100	4,360	23,000	8,310	7,450	2,350	14,400	4,740	18,100	6,120	2,020	510	18,400	6,170
6	18,400	6,410	24,500	8,970	13,500	4,590	21,900	7,520	21,400	7,400	2,120	538	22,000	7,670
7	18,900	6,590	24,400	8,970	15,300	5,250	22,000	7,600	21,600	7,400	2,100	532	22,100	7,650
	Oct. 7, 1953		Oct. 26, 1953		Dec. 2, 1953		Jan. 27, 1954		Mar. 24, 1954		Apr. 19, 1954		May 7, 1954	
2	5,200	1,510	19,500	6,760	21,700	7,800	606	76	5,530	1,570	693	143	594	88
3	5,710	1,700	19,700	6,910	22,700	8,180	561	73	5,830	1,700	1,310	312	5,600	1,650
6	9,300	2,950	22,000	7,850	23,600	8,510	15,200	5,000	11,000	3,490	7,920	2,440	22,200	7,770
7	11,400	3,740	21,000	7,450	23,600	8,530	15,500	5,080	10,900	3,470	8,060	2,460	22,100	7,700
	Oct. 9, 1953		Oct. 28, 1953		Dec. 9, 1953		Feb. 3, 1954		Mar. 31, 1954		Apr. 21, 1954		May 10, 1954	
2	14,800	5,030	13,000	4,360	1,880	445	9,940	3,150	8,320	2,550	835	179	478	94
3	16,700	5,750	12,900	4,360	693	136	14,100	4,590	9,140	2,800	17,400	5,770	473	92
6	22,400	8,110	17,700	6,090	18,100	6,270	16,300	5,430	25,400	9,020	20,000	6,410	2,920	810
7	22,300	8,040	17,600	6,140	18,400	6,320	17,000	5,720	24,900	8,770	20,500	6,960	2,930	820
	Oct. 12, 1953		Oct. 30, 1953		Dec. 16, 1953		Feb. 10, 1954		Apr. 5, 1954		Apr. 23, 1954		May 12, 1954	
2	15,900	5,300	1,820	425	650	116	852	156	27,400	9,800	1,210	250	1,450	365
3	17,400	5,900	8,900	2,900	609	112	772	142	27,600	9,830	11,400	3,590	5,820	1,710
6	22,100	7,820	22,300	8,090	609	113	723	125	27,400	9,780	24,800	8,660	20,700	7,160
7	22,100	7,820	22,400	8,210	606	113	741	132	27,500	9,800	25,000	8,750	20,700	7,160
	Oct. 14, 1953		Nov. 2, 1953		Dec. 23, 1953		Feb. 17, 1954		Apr. 7, 1954		Apr. 26, 1954		May 14, 1954	
2	14,000	4,610	1,140	220	855	184	1,510	345	27,900	10,000	851	164	1,030	182
3	15,100	5,080	15,800	5,500	840	179	1,660	375	28,200	10,100	856	166	900	175
6	20,500	7,200	24,700	9,120	829	177	12,200	3,940	28,100	10,000	16,300	5,380	16,800	5,650
7	20,700	7,250	23,900	8,920	825	175	12,600	4,020	28,500	10,200	16,000	5,230	16,400	5,500
	Oct. 16, 1953		Nov. 4, 1953		Dec. 30, 1953		Feb. 24, 1954		Apr. 9, 1954		Apr. 28, 1954		May 17, 1954	
2	15,700	5,300	12,000	4,090	380	66	--	--	11,200	3,490	1,220	238	290	46
3	15,400	5,230	19,600	6,860	370	67	976	179	11,400	3,590	13,300	4,390	268	42
6	21,000	7,450	25,800	9,700	392	74	--	--	24,000	8,330	21,300	7,220	10,000	3,200
7	20,800	7,350	25,800	9,680	406	75	1,170	222	24,000	8,280	21,700	7,450	10,900	3,470
	Oct. 19, 1953		Nov. 11, 1953		Jan. 6, 1954		Mar. 3, 1954		Apr. 12, 1954		Apr. 30, 1954		May 19, 1954	
2	13,300	4,440	16,200	5,550	524	103	1,720	418	9,790	3,020	22,000	7,620	370	60
3	16,500	5,670	18,000	6,190	522	104	3,210	880	20,600	6,710	23,600	8,260	359	57
6	21,500	7,570	23,700	8,610	524	102	11,800	3,810	27,000	9,630	25,300	8,990	372	62
7	21,200	7,550	24,300	8,800	537	108	11,700	3,710	27,500	9,780	25,500	9,070	370	62

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.--Continued

Specific conductance (micromhos at 25°C) and chloride in parts per million, water year October 1953 to September 1954--Continued

Station Number	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride	Specific Conductance	Chloride
	May 21, 1954		June 9, 1954		June 28, 1954		July 21, 1954		Aug. 9, 1954		Aug. 27, 1954		Sept. 15, 1954	
2	534	67	2,950	790	17,600	6,040	25,300	9,170	16,300	5,480	28,800	10,600	28,300	10,300
3	515	64	5,450	1,600	19,600	6,860	26,400	9,650	18,300	6,270	28,700	10,500	28,900	10,600
6	15,300	5,080	9,770	3,100	20,700	7,250	27,900	10,400	25,600	9,220	28,300	10,500	29,900	11,000
7	15,300	5,100	9,970	3,170	20,700	7,270	28,100	10,400	25,500	9,020	28,900	10,600	29,600	11,000
	May 24, 1954		June 11, 1954		June 30, 1954		July 23, 1954		Aug. 11, 1954		Aug. 30, 1954		Sept. 17, 1954	
2	426	39	6,850	2,060	15,700	5,200	26,400	9,900	20,300	7,060	22,300	7,940	31,300	11,700
3	435	39	12,800	4,110	16,600	5,650	26,800	9,900	22,600	7,940	23,200	8,180	31,300	11,700
6	408	34	16,500	5,500	18,900	6,590	26,300	9,650	25,900	9,320	27,300	9,900	31,300	11,700
7	438	38	16,500	5,500	18,900	6,560	26,300	9,650	26,000	9,420	27,300	9,900	31,300	11,700
	May 26, 1954		June 14, 1954		July 2, 1954		July 26, 1954		Aug. 13, 1954		Sept. 1, 1954		Sept. 20, 1954	
2	480	60	6,470	1,910	18,200	6,220	26,500	9,900	20,700	7,250	24,000	8,530	31,300	11,700
3	487	62	13,100	4,210	18,500	6,370	26,800	9,900	22,000	7,750	25,600	9,320	31,600	11,800
6	1,420	335	16,900	5,620	18,900	6,590	30,300	11,600	25,400	9,070	26,500	9,800	31,600	11,800
7	3,100	850	16,900	5,620	18,900	6,560	30,400	11,600	25,400	9,070	27,000	9,700	31,600	11,800
	May 28, 1954		June 16, 1954		July 5, 1954		July 28, 1954		Aug. 16, 1954		Sept. 3, 1954		Sept. 22, 1954	
2	549	74	15,900	5,250	17,100	5,850	28,700	10,600	22,600	7,940	27,800	10,100	29,100	10,700
3	548	71	17,100	5,750	18,300	6,340	28,700	10,600	24,000	8,480	27,800	10,100	29,900	11,100
6	769	138	18,100	6,120	19,600	6,860	29,000	10,900	25,400	9,170	27,900	10,300	30,200	11,200
7	883	163	18,000	6,070	19,600	6,810	28,800	10,900	25,800	9,220	27,900	10,300	30,400	11,400
	May 31, 1954		June 18, 1954		July 7, 1954		July 30, 1954		Aug. 18, 1954		Sept. 6, 1954		Sept. 24, 1954	
2	524	75	16,400	5,500	19,900	6,960	28,100	10,400	22,600	7,940	28,500	10,500	31,300	11,500
3	528	77	16,700	5,580	19,700	6,960	28,100	10,200	23,900	8,480	28,600	10,500	31,600	11,800
6	4,110	1,160	17,400	5,850	19,800	6,910	28,500	10,500	23,500	8,280	28,600	10,500	31,400	11,800
7	4,020	1,120	17,300	5,820	19,800	6,910	28,300	10,400	25,800	9,270	28,100	10,200	31,600	11,700
	June 2, 1954		June 21, 1954		July 9, 1954		Aug. 2, 1954		Aug. 20, 1954		Sept. 8, 1954		Sept. 27, 1954	
2	6,740	2,030	17,600	5,950	19,200	6,660	537	100	28,200	10,300	27,400	9,990	29,100	10,900
3	7,160	2,150	18,000	6,040	19,400	6,760	529	95	28,600	10,400	27,400	9,990	29,100	10,800
6	8,360	2,610	20,800	7,170	20,800	7,220	23,400	8,280	28,300	10,500	28,600	10,500	31,900	12,000
7	7,530	2,600	20,800	7,170	20,600	7,200	23,600	8,480	27,800	10,500	28,600	10,500	31,900	11,900
	June 4, 1954		June 23, 1954		July 12, 1954		Aug. 4, 1954		Aug. 23, 1954		Sept. 10, 1954		Sept. 29, 1954	
2	1,020	210	14,700	4,910	21,900	7,750	784	185	28,800	10,500	27,700	10,100	30,500	11,500
3	1,380	312	18,400	6,390	21,800	7,750	11,500	3,740	28,800	10,500	27,900	10,200	31,600	11,800
6	4,140	1,180	20,500	7,200	25,200	9,420	19,600	6,830	28,800	10,700	28,400	10,400	31,700	12,000
7	4,050	1,150	20,600	7,200	25,200	9,170	15,900	5,380	28,600	10,600	28,100	10,300	31,600	11,800
	June 7, 1954		June 25, 1954		July 19, 1954		Aug. 6, 1954		Aug. 25, 1954		Sept. 13, 1954			
2	7,070	2,150	18,400	6,370	25,800	9,650	15,300	5,180	28,800	10,600	28,600	10,400		
3	9,390	2,920	19,300	6,730	26,500	9,900	22,900	8,180	28,600	10,600	28,900	10,700		
6	10,100	3,200	20,500	7,250	--	--	26,600	9,650	28,900	10,700	29,100	10,700		
7	10,500	3,320	20,600	7,250	--	--	26,600	9,600	28,800	10,700	29,300	10,800		

MISCELLANEOUS ANALYSES OF STREAMS IN TRINITY RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
CLEAR FORK TRINITY RIVER NEAR ALEDO																						
May 21, 1954----------	2.0	9.6	0.05	55	9.4	27		201	31	23	0.3	4.5		273	0.37		176	11	25	0.9	451	7.7
LAKE ANAHUAC NEAR ANAHUAC																						
Nov. 18, 1953---------		9.6	.10	34	15	155	8.6	130	41	242	.2	1.8	0.22	582	.79		146	40	68	5.6	1,050	7.7

SAN JACINTO RIVER BASIN

SAN JACINTO RIVER NEAR HUFFMAN, TEX.

LOCATION.--At Sheldon pumping plant of City of Houston, 5½ miles downstream from site of Huffman gaging station (discontinued) at Beaumont, Sour Lake & Western Railway bridge, 0.4 mile downstream from confluence of East and West Forks, and 3.4 miles southwest of Huffman, Harris County.
DRAINAGE AREA.--2,791 square miles, at gaging station.
RECORDS AVAILABLE.--Chemical analyses: September 1945 to July 1948, December 1948 to April 1954.
Water temperatures: January 1949 to April 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 282 ppm Mar. 23-31, Apr. 1-5; minimum, 120 ppm Nov. 5-6, 8-11, 21.
Hardness: Maximum, 103 ppm Mar. 23-31, Apr. 1-5; minimum, 40 ppm Dec. 21-31.
Specific conductance: Maximum daily, 561 micromhos Mar. 28; minimum daily, 163 micromhos Dec. 7.
Water temperatures: Maximum observed, 86°F Oct. 6; minimum observed, 43°F Dec. 26, Mar. 6.
EXTREMES, 1945-54.--Dissolved solids: Maximum, 2,820 ppm Nov. 21-23, 28, 1951; minimum, 44 ppm Oct. 4-10, 1949.
Hardness: Maximum, 566 ppm Nov. 21-23, 28, 1951; minimum, 16 ppm Oct. 4-10, 1949.
Specific conductance: Maximum daily, 6,340 micromhos Nov. 23, 1951; minimum daily, 78.9 micromhos Sept. 1, 1945.
Water temperatures (1949-54): Maximum observed 92°F July 3, 1952; minimum observed, freezing point Feb. 2, 1951.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Gaging station discontinued Sept. 30, 1953.

Chemical analyses, in parts per million, October 1953 to April 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-13, 1953--------		21		24	4.1	61		86	5.4	94		1.2		253	0.34		77	6	63	3.0	461	7.6
Oct. 14-26-------------		19		24	3.9	57		80	5.4	90		1.0		239	.33		76	10	62	2.8	429	7.4
Oct. 27-31-------------		12		16	3.8	46		56	5.7	72		1.8		185	.25		56	10	64	2.7	341	7.4
Nov. 1-4, 23-25--------		17		18	1.9	24		64	5.0	33		1.5		131	.18		53	0	50	1.4	222	7.3
Nov. 5-6, 8-11, 21-----		16		14	2.2	23		46	5.9	34		2.0		120	.16		44	6	53	1.5	204	7.3
Nov. 7, 12-20, 22, 26-30----------		19		21	2.6	42		66	6.6	66		1.5		191	.26		63	0	59	2.3	331	7.5
Dec. 1-4, 14-15--------		22		23	3.7	48		72	9.2	76		2.0		219	.30		72	6	59	2.5	387	7.5
Dec. 5-13, 16-20-------		18		21	2.7	24		65	6.5	39		1.2		144	.20		64	10	45	1.3	251	7.4
Dec. 21-31-------------		14		13	1.9	22		41	5.6	34		1.8		122	.17		40	7	54	1.5	195	7.3
Jan. 1-5, 14-20, 1954--		14		17	3.0	28		49	6.6	49		.8		142	.19		55	15	53	1.7	256	7.5
Jan. 6, 10-13, 21-25---		18		22	3.7	36		64	6.8	62		1.0		180	.24		70	18	53	1.9	330	7.7
Jan. 7-9, 26-31--------		21		27	4.5	48		74	7.8	86		1.5		232	.32		86	26	55	2.3	423	7.8
Feb. 1-11--------------		22		32	4.9	52		91	8.2	91		1.2		256	.35		100	26	53	2.2	469	7.8
Feb. 12-22-------------		20		33	4.9	59		93	8.0	103		.8		275	.37		102	26	55	2.5	509	7.9
Feb. 23-28-------------		17		27	4.6	38		77	6.7	70		1.2		202	.27		86	24	49	1.8	375	7.9
Mar. 1-11--------------		20		31	3.8	47		90	7.5	80		1.8		235	.32		93	20	53	2.1	431	7.8
Mar. 12-22-------------		20		33	4.4	55		96	7.0	94		1.0		261	.35		100	22	54	2.4	480	7.8
Mar. 23-31, Apr. 1-5---		18		34	4.4	63		96	6.8	108		1.0		282	.38		103	24	57	2.7	524	7.8

BRAZOS RIVER AT POSSUM KINGDOM DAM NEAR GRAFORD, TEX.

LOCATION.--Immediately below dam on Brazos River, 2.6 miles upstream from Loving Creek, 11.3 miles southwest of Graford, Palo Pinto County, and 20 miles upstream from gaging station near Palo Pinto.
DRAINAGE AREA.--22,550 square miles, approximately, of which 9,240 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: January 1942 to September 1954.
Water temperatures: October 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,790 ppm Feb. 6-19; minimum, 1,120 ppm July 1-31.
Hardness: Maximum, 493 ppm Feb. 6-19; minimum, 356 ppm May 1-31.
Specific conductance: Maximum daily, 3,430 micromhos Feb. 18; minimum daily, 1,830 micromhos Nov. 20, 27.
Water temperatures: Maximum observed, 75°F Oct. 10; minimum observed, 48°F on several days during January and February.
EXTREMES, 1942-54.--Dissolved solids: Maximum, 2,130 ppm Feb. 2-9, 1942; minimum, 829 ppm Sept. 1-10, 1942.
Hardness: Maximum, 661 ppm Feb. 2-9, 1942; minimum, 318 ppm Dec. 21-31, 1942.
Specific conductance: Maximum daily, 3,750 micromhos Feb. 11, 1942; minimum daily, 1,100 micromhos June 20, 1942.
Water temperatures (1949-54): Maximum observed 76°F Sept. 27-30, 1950; minimum observed, 45°F on several days in February 1951.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for gaging station near Palo Pinto for water year October 1953 to September 1954 given in Water-Supply Paper 1342. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1953-------	850	12		133	24	320		121	260	535		2.0		1,350	1.84	3,100	430	229	62	6.7	2,390	7.6
Nov. 1-30-------------	899	15		124	18	285		104	261	458		1.5		1,210	1.65	2,940	384	298	62	6.3	2,090	7.4
Dec. 1-31-------------	368	15		114	19	282		106	249	445		1.8		1,180	1.60	1,170	362	276	63	6.5	2,030	7.6
Jan. 1-31, 1954-------	233	13		123	21	314		109	268	500		3.8		1,300	1.77	818	394	304	63	6.9	2,220	7.7
Feb. 1-5, 20-28-------	325	14		131	25	357		118	281	578		3.5		1,450	1.97	1,270	430	334	64	7.5	2,530	7.9
Feb. 6-19-------------	39.6	12		148	30	463		124	324	750		4.0		1,790	2.43	191	493	392	67	9.0	3,170	7.9
Mar. 1-31-------------	234	17		124	19	316		115	251	510		1.0		1,300	1.77	821	388	294	64	7.0	2,300	7.7
Apr. 1-30-------------	663	13		118	18	294		114	241	470		.8		1,210	1.65	2,170	368	275	63	6.7	2,090	7.7
May 1-31--------------	5,431	14		116	16	291		116	235	460		1.0		1,190	1.62	17,400	356	260	64	6.7	2,090	7.9
June 1-30-------------	1,669	14		114	18	271		109	230	438		1.8		1,140	1.55	5,140	358	269	62	6.2	1,990	7.8
July 1-31-------------	985	16		114	20	259		111	250	410		1.0		1,120	1.52	2,980	366	276	61	5.9	1,960	7.6
Aug. 1-31-------------	826	11		123	17	283		110	272	438		1.0		1,200	1.63	2,680	377	287	62	6.4	2,080	7.7
Sept. 1-30------------	171	13	0.00	127	20	298		110	297	458	0.4	1.0		1,270	1.73	586	399	309	62	6.5	2,150	7.4
Weighted average----	1,052	14		118	18	289		113	245	460		1.3		1,200	1.63	3,410	368	276	63	6.6	2,100	--

BRAZOS RIVER NEAR WHITNEY, TEX.

LOCATION.--At Whitney Dam on State Highway 22, 3.4 miles upstream from gaging station which is 1.0 miles downstream from Coon Creek, 7.5 miles south of Whitney, Hill County, and at mile 439.
DRAINAGE AREA.--26,190 square miles, approximately, above gaging station of which 9,240 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to May 1948, October 1948 to September 1954.
Water temperatures: October 1947 to May 1948, October 1948 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,220 ppm Nov. 19-20, 22-23; minimum, 824 ppm Oct. 1-13.
Hardness: Maximum, 380 ppm Nov. 19-20, 22-23; minimum, 293 ppm Oct. 1-13.
Specific conductance: Maximum daily, 2,150 micromhos Nov. 23; minimum daily, 1,360 micromhos Oct. 1.
Water temperatures: Maximum observed, 98°F July 8; minimum observed, 40°F Jan. 10.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 1,560 ppm Oct. 1-10, 1948; minimum, 183 ppm June 11-20, 1952.
Hardness: Maximum, 542 ppm Oct. 1-10, 1948; minimum, 96 ppm June 11-20, 1952.
Specific conductance: Maximum daily, 2,660 micromhos Oct. 1, 1948; minimum daily, 203 micromhos May 23, 1952.
Water temperatures: Maximum observed 98°F July 8, 1954; minimum observed, freezing point Jan. 28-29, 1948.
REMARKS.--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-13, 1953------	56.2	14		91	16	185		150	144	298		2.0		824	1.12	125	293	170	58	4.7	1,440	7.8
Oct. 14-15, 19-20, 26-31----------	56.0	10		100	17	217		143	175	348		1.5		938	1.28	142	320	202	60	5.3	1,660	7.7
Oct. 16-18, 21-25-----	50.2	10		108	19	255		133	202	412		2.5		1,070	1.46	145	348	238	61	5.9	1,870	7.6
Nov. 1-15----------	68.1	12		100	17	214		144	165	350		1.5		a1,000	1.36	184	320	202	59	5.2	1,660	7.9
Nov. 16-18, 21, 24-30-	211	11		104	16	225		138	179	365		1.2		a1,030	1.40	6,450	326	212	60	5.4	1,720	8.0
Nov. 19-20, 22-23-----	76.8	13		124	17	291		119	235	475		1.5		1,220	1.66	253	380	282	63	6.5	2,140	8.0
Dec. 1-10----------	70.7	11		106	17	231		137	185	375		2.2		a1,080	1.47	206	334	222	60	5.5	1,800	8.0
Dec. 11-20----------	98.7	13		103	17	225		141	178	365		1.2		a1,050	1.43	280	327	209	60	5.4	1,750	8.1
Dec. 21-31----------	77.8	13		104	16	228		142	181	365		1.0		a1,040	1.41	218	326	209	60	5.5	1,740	8.1
Jan. 1-10, 1954-------	65.9	9.4		102	19	228		143	184	368		1.5		982	1.34	175	332	216	60	5.5	1,740	7.9
Jan. 11-20----------	70.2	10		102	19	224		142	184	362		2.0		973	1.32	184	332	216	59	5.4	1,720	7.9
Jan. 21-31----------	81.1	6.8		110	18	233		142	200	375		2.0		1,010	1.37	221	348	232	59	5.4	1 780	7.8
Feb. 1-28----------	62.4	7.0		102	19	233		142	189	370		4.0		a1,060	1.44	179	332	216	60	5.5	1,740	8.1
Mar. 1-10----------	81.9	11		105	16	224		143	176	365		1.0		968	1.32	214	328	211	60	5.4	1,740	8.0
Mar. 11-20----------	47.5	11		104	16	222		143	176	360		2.0		961	1.31	123	326	208	60	5.4	1,740	8.0
Mar. 21-31----------	288	7.0		105	16	229		145	180	368		1.0		977	1.33	760	328	209	60	5.5	1,760	7.9
Apr. 1-10----------	735	13		104	17	233		144	188	370		1.5		a1,080	1.47	2,140	330	212	61	5.6	1,760	7.9
Apr. 11-20----------	824	12		106	17	231		147	184	370		2.2		a1,070	1.46	2,380	334	214	60	5.5	1,770	8.0
Apr. 21-30----------	292	15		104	18	230		147	185	368		1.5		a1,070	1.46	844	334	213	60	5.5	1,760	8.2
May 1-10----------	1,239	9.6		106	19	232		143	188	378		1.5		1,000	1.36	3,350	342	226	60	5.5	1,790	7.9
May 11-20----------	10,070	8.4		108	19	231		139	188	382		2.0		1,010	1.37	27,460	348	234	59	5.4	1,810	7.7
May 21-31----------	4,647	8.2		104	18	230		132	193	370		2.0		990	1.35	12,420	334	226	60	5.5	1,770	7.7
June 1-10----------	3,164	11		106	18	246		117	206	398		1.0		1,040	1.41	8,880	338	242	61	5.8	1,870	7.9
June 11-20----------	1,454	12		110	17	264		122	217	420		1.5		1,100	1.50	4,320	344	244	63	6.2	1,950	7.8
June 21-30----------	1,568	9.4		110	19	263		122	219	422		1.5		1,100	1.50	4,660	352	252	62	6.1	1,960	7.8
July 1-10----------	970	9.0		110	17	264		118	218	420		2.5		1,100	1.50	2,880	348	250	62	6.2	1,960	7.8
July 11-20----------	1,101	9.4		110	18	263		121	219	420		1.2		1,100	1.50	3,270	344	248	62	6.1	1,950	7.8
July 21-31----------	1,395	9.5		110	19	262		122	216	422		1.2		1,100	1.50	4,140	352	252	62	6.1	1,960	7.8
Aug. 1-10----------	901	12		110	16	265		125	210	422		1.5		1,100	1.50	2,680	340	238	63	6.3	1,950	7.8
Aug. 11-20----------	1,126	11		110	16	268		126	211	425		2.0		1,100	1.50	3,340	340	238	63	6.3	1,960	7.7
Aug. 21-31----------	591	8.7		112	17	277		124	219	440		1.0		1,140	1.55	1,820	350	248	63	6.4	2,010	7.8
Sept. 1-10----------	252	16		112	18	253		147	197	408		4.0		1,080	1.47	735	354	233	61	5.8	1,910	8.0
Sept. 11-20----------	347	13		114	19	264		131	211	430		2.2		1,120	1.52	1,050	362	255	61	6.0	1,990	7.7
Sept. 21-30----------	331	14		114	19	270		124	221	435		5.0		1,140	1.55	1,020	362	261	62	6.2	2,030	7.7
Weighted average----	912	9.6		107	18	242		131	198	392		1.8		1,040	1.41	2,560	341	234	61	5.7	1,850	--

a Residue on evaporation at 180°C.

BRAZOS RIVER AT RICHMOND, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Richmond, Fort Bend County, 925 feet downstream from Texas & New Orleans Railroad bridge and at mile 93.
DRAINAGE AREA.--44,050 square miles, approximately, of which 9,240 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1954.
Water temperatures: November 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,020 ppm June 11-20, Aug. 21-31; minimum, 168 ppm Oct. 29-31.
Hardness: Maximum, 330 ppm June 11-20; minimum, 88 ppm Nov. 1-11.
Specific conductance: Maximum daily, 1,910 micromhos Sept. 2; minimum daily, 208 micromhos Oct. 31.
Water temperatures: Maximum observed, 86°F Aug. 12, 14-17; minimum observed, 40°F Dec. 24.
EXTREMES, 1945-54.--Dissolved solids: Maximum, 1,400 ppm Sept. 1-10, 1951; minimum, 133 ppm Aug. 27-31, 1947.
Hardness: Maximum, 446 ppm Sept. 1-10, 1948; minimum, 74 ppm Jan. 13-14, 18-20, 1950.
Specific conductance: Maximum daily, 2,540 micromhos Sept. 4, 1951; minimum daily, 187 micromhos Aug. 31, 1947.
Water temperatures (1950-54): Maximum observed, 91°F Aug. 5, 1951; minimum observed, 40°F Dec. 24, 1953.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 28, 1953---	1,961	19		52	13	52	4.1	190	41	76	0.4	1.0	0.18	a352	0.48	1,860	183	28	38	1.7	611	8.0
Oct. 11-20----------	494	21		53	15	54	4.0	203	48	72	.3	.8	.21	a368	.50	491	194	27	37	1.7	639	8.0
Oct. 21-27----------	1,251	19		60	16	64	4.0	224	63	79	.3	1.8	.24	a417	.57	1,410	216	32	39	1.9	715	8.1
Oct. 29-31----------	23,870	14		32	3.7	14	3.3	111	18	13	.4	4.8	--	168	.23	10,830	95	4	24	.6	244	8.0
Nov. 1-11----------	6,146	16		30	3.3	19	4.0	99	17	24	.5	1.5	.14	178	.24	2,950	88	8	31	.9	279	8.0
Nov. 12-16, 19-23, 25-26----------	2,004	15		41	5.6	33	4.1	131	24	45	.4	1.5	.11	242	.33	1,310	126	18	35	1.3	400	8.1
Nov. 17-18, 24, 27-30-	1,277	14		55	7.9	44	4.2	179	35	60	.5	1.2	.30	312	.42	1,080	170	23	35	1.5	524	8.0
Dec. 1-4----------	3,478	13		56	9.9	62	4.0	176	47	86	.6	4.2	.16	384	.52	3,610	180	36	42	2.0	658	7.8
Dec. 5-18----------	11,030	18		32	3.6	16	3.8	100	22	18	.7	2.5	.09	187	.25	5,570	95	16	26	.7	273	7.7
Dec. 19-31----------	8,503	17		29	4.4	20	3.6	96	19	28	.5	2.0	.10	203	.28	4,660	90	12	31	.9	290	7.9
Jan. 1-9, 1954--------	3,268	20		31	5.0	25	3.8	102	23	34	.5	2.0	.10	203	.28	1,790	98	14	35	1.1	326	7.8
Jan. 10-20----------	1,759	22		52	8.1	35	4.0	168	38	47	.3	2.0	.19	a292	.40	1,390	163	26	31	1.2	490	8.0
Jan. 21-31----------	1,915	20		61	11	58	4.3	178	61	84	.3	2.5	.12	392	.53	2,030	197	38	38	1.8	660	8.1
Feb. 1-10----------	1,135	20		61	11	70	4.4	186	51	105	.4	1.5	.14	416	.57	1,270	197	44	43	2.2	715	8.2
Feb. 11-19----------	898	18		54	14	95	4.4	210	70	110	1.8	1.2	.12	a472	.64	1,140	192	20	51	3.0	787	8.2
Feb. 20-28----------	810	17		55	15	76	4.2	176	70	111	.3	1.2	.11	442	.60	967	198	54	45	2.3	763	8.1
Mar. 1-10----------	629	18		66	16	84	4.4	218	76	115	.9	1.0	.14	496	.67	842	230	52	44	2.4	836	8.2
Mar. 11-20----------	489	17		56	17	87	--	189	73	119	.3	1.0	.20	a464	.63	613	210	54	47	2.6	805	8.1
Mar. 21-31----------	239	18		66	17	86	--	227	72	112	.3	.8	.22	486	.66	314	234	48	44	2.4	836	8.1
Apr. 1-15----------	854	22		56	15	79	3.3	191	68	107	.3	2.0	.20	460	.63	1,060	201	44	46	2.4	781	8.1
Apr. 16, 24-28--------	830	15		70	12	119	--	153	112	175	.4	1.2	.18	607	.83	1,360	224	98	54	3.4	1,040	8.1
Apr. 17-23, 29-30-----	786	15		86	16	162	--	173	140	252	.4	1.2	.21	797	1.08	1,690	280	138	55	4.2	1,350	8.1
May 1-6, 15, 20--------	5,002	18		76	16	141	5.6	152	121	228	.5	3.2	.10	699	.95	9,440	256	131	54	3.8	1,220	8.1
May 7-14, 16----------	3,610	18		57	9.1	78	5.7	135	81	115	.5	4.0	.15	444	.60	4,330	180	69	48	2.5	767	8.1
May 17-19----------	11,910	17		38	5.0	37	--	114	34	48	.6	4.2	--	240	.33	7,720	116	22	41	1.5	420	7.8
May 21-31----------	10,100	16		85	14	181	--	127	145	292	.4	2.8	.18	840	1.14	22,910	270	166	59	4.8	1,430	8.1
June 1-10----------	5,141	15		96	14	206	--	130	177	340	.2	2.8	.19	965	1.31	13,390	297	190	60	5.2	1,630	7.7
June 11-20----------	2,279	12		104	17	225	--	133	193	365	.3	1.5	.24	1,020	1.39	6,280	330	220	60	5.4	1,730	7.8
June 21-30----------	1,240	13		102	17	217	--	146	186	355	.2	1.8	.26	994	1.35	3,330	324	205	59	5.2	1,690	7.7
July 1-10----------	1,144	17		102	18	229	--	138	196	375	.2	1.8	.19	a1,010	1.37	3,120	328	216	60	5.5	1,740	8.0
July 11-20----------	554	16		96	18	215	--	141	182	350	.2	2.0	.20	993	1.35	1,490	314	198	60	5.3	1,660	8.0
July 21-31----------	898	16		94	19	224	--	131	186	365	.2	2.2	.22	1,010	1.37	2,450	312	205	61	5.5	1,690	8.0
Aug. 1-3, 7-11, 15-20-	924	15		96	18	216	6.5	141	177	338	.2	2.0	.11	992	1.35	2,470	314	198	59	5.3	1,650	7.9
Aug. 4-6, 12-14-------	1,162	16		84	14	172	6.0	142	139	268	.2	2.0	.08	812	1.10	2,550	267	150	58	4.6	1,370	7.9
Aug. 21-31----------	800	13		100	19	240	6.7	143	194	372	.2	1.8	.11	a1,020	1.39	2,200	328	210	61	5.7	1,810	7.8
Sept. 1-10----------	538	14		98	20	241	6.6	148	189	370	.2	2.0	.15	a1,010	1.37	1,470	326	205	61	5.8	1,760	7.9
Sept. 11-20----------	316	17		89	21	199	6.1	167	157	308	.2	1.8	.12	921	1.25	786	308	172	58	4.9	1,550	8.0
Sept. 21-30----------	389	15		85	21	192	6.0	179	152	290	.2	1.5	.20	879	1.20	923	298	152	58	4.8	1,500	8.0
Weighted average----	2,727	17		55	9.1	83	4.1	124	72	127	0.5	2.5	0.14	453	0.62	3,340	174	73	50	2.7	754	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (sum)		Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
													Parts per million	Tons per acre-foot	Calcium magnesium	Noncarbonate				
DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR LUBBOCK SEWAGE PLANT																				
Nov. 30, 1953	0.08	49	--	--	--		--	--	563	440	--	28	--	--	--	--	--	--	2,960	--
Jan. 21, 1954	.05	33	75	180	303		418	16	556	430	--	38	1,840	2.50	927	558	42	4.3	2,960	8.4
Mar. 18	.11	36	82	187	303		453	21	561	440	--	28	1,880	2.56	974	568	40	4.2	2,960	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER ON STATE HIGHWAY 835, 4.3 MILES SOUTHEAST OF LUBBOCK																				
Nov. 30, 1953	2.17	59	--	--	--		--	--	563	450	--	59	--	--	--	--	--	--	3,060	--
Jan. 21, 1954	1.83	42	89	160	333		448	16	545	422	--	58	1,880	2.56	880	486	45	4.9	2,970	8.4
Mar. 18	2.16	52	82	173	319		446	16	535	440	--	50	1,890	2.57	916	524	43	4.6	2,980	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER ON STATE HIGHWAY 835, 7.8 MILES SOUTHEAST OF LUBBOCK																				
Nov. 30, 1953	2.84	24	54	158	288		396	15	509	372	--	8.2	1,620	2.20	784	434	44	4.5	2,690	8.4
Jan. 21, 1954	2.72	26	54	160	284		405	15	501	368	--	16	1,620	2.20	796	436	44	4.4	2,670	8.4
Mar. 18	3.62	36	77	168	321		478	26	539	400	--	26	1,830	2.49	883	448	44	4.7	2,880	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER 7.5 MILES NORTHWEST OF SLATON																				
Nov. 30, 1953	1.96	14	--	--	--		--	--	324	238	--	1.5	--	--	--	--	--	--	1,850	--
Jan. 21, 1954	1.83	8.6	47	114	227		327	14	372	282	--	4.8	1,230	1.67	586	294	46	4.1	2,050	8.4
Mar. 18	1.88	6.8	49	138	279		371	17	483	325	--	3.5	1,480	2.01	690	358	47	4.6	2,350	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER ¼ MILE BELOW LOWER BUFFALO LAKES DAM, NEAR SLATON																				
Nov. 30, 1953	2.82	18	47	88	168		304	0	281	215	--	1.2	967	1.32	480	230	43	3.3	1,710	8.2
Jan. 21, 1954	4.60	19	60	103	203		380	13	314	250	--	3.0	1,150	1.56	573	240	44	3.7	1,940	8.4
Mar. 18	.05	32	78	130	222		516	26	349	270	--	1.5	1,360	1.85	729	262	40	3.6	2,200	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER ON STATE HIGHWAY 400, 5.5 MILES NORTH OF SLATON																				
Nov. 30, 1953	2.45	24	--	--	--		--	--	279	228	--	.5	--	--	--	--	--	--	1,840	--
Jan. 21, 1954	.21	18	62	108	212		405	30	307	252	--	1.8	1,190	1.62	598	216	44	3.8	1,990	8.6
Mar. 18	.36	26	42	136	267		475	26	365	305	--	2.0	1,400	1.90	664	232	47	4.4	2,350	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER 4.2 MILES NORTHEAST OF SLATON																				
Nov. 30, 1953	1.28	22	--	--	--		--	--	305	238	--	.5	--	--	--	--	--	--	1,950	--
Jan. 21, 1954	.03	20	62	119	287		453	27	417	295	--	3.0	1,450	1.97	644	228	49	4.9	2,340	8.5
Mar. 18	.03	24	48	226	976		680	44	1,490	700	--	2.5	3,840	5.22	1,050	419	67	13	5,460	8.6
WHITE RIVER AT COUNTY ROAD CROSSING 4½ MILES EAST OF CROSBYTON																				
Jan. 20, 1954	2.17	46	--	--	--		--	--	63	28	--	.5	--	--	--	--	--	--	879	--
WHITE RIVER AT U. S. HIGHWAY 82, 4½ MILES EAST OF CROSBYTON																				
Jan. 20, 1954	1.84	44	--	--	--		--	--	70	27	--	.5	--	--	--	--	--	--	853	--
LAKE STAMFORD NEAR HASKELL																				
Oct. 2, 1953	--	9.4	33	9.5	10	5.2	157	0	9.4	7.2	0.4	1.5	163	.22	121	0	15	.4	297	7.9
LAMPASAS RIVER AT FORT HOOD																				
May 25, 1954	--	7.4	49	15	55		188	0	9.3	98	.4	.2	326	.44	184	30	39	1.7	612	7.8

COLORADO RIVER BASIN

BULL CREEK NEAR IRA, TEX.

LOCATION.--At gaging station (discontinued) 267 feet upstream from highway crossing, 1.5 miles upstream from Colorado River, 5.5 miles upstream from Chimney Creek, 5.8 miles west of Ira, Scurry County, and 6.9 miles northwest of Cuthbert.
DRAINAGE AREA.--388 square miles, approximately (contributing area).
RECORDS AVAILABLE.--Chemical analyses: April 1950 to January 1954.
Water temperatures: April 1950 to September 1951.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Gaging station discontinued Sept. 30, 1953. No discharge records available.

Chemical analyses, in parts per million, October 1953 to January 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1, 1953----------		--		--	--	--		230	--	80		--		--	--		157	0	--	--	731	8.2
Oct. 5-6, 11-14, 20, 28, 30-31----------		16		51	10	106		160	91	120		3.8		479	0.65		168	37	58	3.5	831	8.1
Oct. 7, 23-25---------		12		29	3.8	26		120	19	17		4.0		174	.24		88	0	39	1.2	302	7.7
Oct. 8-10----------		14		32	6.3	58		124	46	56		4.2		278	.38		106	4	54	2.4	489	7.8
Nov. 11, 14, 19-------		13		72	17	166		196	136	210		15		735	1.00		250	89	59	4.6	1,280	7.8
Dec. 1, 5, 8, 12, 15, 19, 23, 26, 28, 31---		13		136	52	348		291	379	480		.5		1,550	2.11		554	315	58	6.4	2,580	7.9
Jan. 4, 9, 1954-------		30		--	--	--		--	393	500		.5		--	--		--	--	--	--	2,670	--

DEEP CREEK NEAR DUNN, TEX.

LOCATION.--At gaging station at bridge on Farm to Market Highway 1606, 2.0 miles Northwest of Dunn, Scurry County, 3.0 miles upstream from Sulphur Draw, and 8.0 miles upstream from mouth.
DRAINAGE AREA.--178 square miles.
RECORDS AVAILABLE.--Chemical analyses: March 1953 to September 1954.
Water temperatures: March 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, October 1953 to June 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 21-31, Nov. 1, 1953	28.2	7.4		29	5.1	16		96	10	25		3.8		168	0.23	12.8	93	15	27	0.7	260	7.8
Jan. 25-26, 29-31, 1954, Feb. 1-10	.17	14		72	11	42		265	51	31		2.5		371	.50	.17	224	8	29	1.2	590	8.2
Apr. 12 (12 m.-4 p.m.)	554	22		55	4.2	125		243	31	135		4.5		502	.68	751	154	0	64	4.4	859	8.2
Apr. 12 (12 p.m.-12 m., 4 p.m.-12 p.m.), 13-31 May 1-2	32.1	14		33	3.0	14		124	9.1	7.5		4.5		155	.21	13.4	95	0	24	.6	251	8.1
May 11-13	662	8.8		29	1.3	19		102	8.1	18		3.0		143	.19	256	78	0	35	1.0	244	7.7
May 14-31, June 1	3.5	22		37	4.5	19		137	15	14		5.0		196	.27	1.9	111	0	27	.8	310	8.1
Weighted average	a8.96	10		31	2.2	21		111	9.4	20		3.5		160	0.22	3.9	86	0	34	1.0	267	--

a Represents 90% of runoff for water year October 1953 to September 1954.

COLORADO RIVER BASIN

COLORADO RIVER AT COLORADO CITY, TEX.

LOCATION.--At gaging station at Colorado City, Mitchell County, 3,517 feet upstream from bridge on U. S. Highway 80, 4,100 feet upstream from Texas & Pacific Railway bridge, 1.6 miles upstream from Lone Wolf Creek, and at mile 796.
DRAINAGE AREA.--4,082 square miles, approximately, of which 2,590 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: May 1946 to September 1954 (discontinued).
Water temperatures: November 1952 to September 1954 (discontinued).
EXTREMES, 1953-54.--Dissolved solids: Maximum, 24,400 ppm Mar. 8-19; minimum, 289 ppm May 12-13, 15, 19.
Hardness: Maximum, 3,020 ppm Mar. 8-19; minimum, 110 ppm Apr. 14-15.
Specific conductance: Maximum daily, 38,500 micromhos Mar. 19; minimum daily, 390 micromhos May 13.
EXTREMES, 1946-54.--Dissolved solids: Maximum, 32,800 ppm Apr. 1-10, 1952; minimum, 176 ppm Oct. 26, 1947.
Hardness: Maximum, 4,500 ppm Aug. 9-12, 1946; minimum, 65 ppm Sept. 15-20, 1949.
Specific conductance: Maximum daily, 45,800 micromhos Apr. 1-10, 1952; minimum daily, 272 micromhos Oct. 26, 1947.
REMARKS.--Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-3, 18-20, 1953--	a1.63	5.5		193	66	1,960		83	487	3,150		--		5,900	8.02	26.0	753	685	85	31	9,940	7.4
Oct. 4, 8-10, 29-31----	40.7	9.6		74	19	513		113	135	810		2.8		1,620	2.20	178	262	170	81	14	2,960	7.8
Oct. 5-7, 23-28--------	824	7.9		36	5.9	107		126	41	142		3.2		420	.57	934	114	12	67	4.4	743	7.7
Oct. 11-17, 21-22------	16.8	7.6		128	42	1,220		95	293	1,950		1.5		3,690	5.02	167	492	414	84	24	6,420	7.6
Nov. 1-5---------------	11.5	6.1		103	35	825		108	207	1,340		1.0		2,570	3.50	79.8	401	312	82	18	4,570	7.5
Nov. 6-13--------------	4.75	4.4		165	56	1,590		111	390	2,550		--		4,810	6.54	61.7	642	551	84	27	8,410	7.6
Nov. 14-20-------------	1.83	5.2		221	80	2,230		118	553	3,590		--		6,740	9.17	33.3	880	784	85	33	11,400	7.0
Nov. 21-30-------------	.67	5.6		301	108	3,050		134	759	4,910		--		9,200	12.5	16.6	1,200	1,080	85	38	15,100	7.4
Dec. 1-10--------------	1.30	4.7		350	137	3,670		134	927	5,920		--		11,100	15.1	39.0	1,440	1,320	85	42	18,100	7.3
Dec. 11-20-------------	.85	7.1		393	165	4,120		141	1,030	6,680		--		12,500	17.0	28.7	1,660	1,540	84	44	20,000	7.2
Dec. 21-31-------------	1.13	5.3		412	166	4,200		155	1,070	6,810		--		12,800	17.4	39.1	1,710	1,580	84	44	20,400	7.7
Jan. 1-31, 1954--------	1.29	6.4		461	173	4,670		150	1,200	7,550		--		14,100	19.2	49.1	1,860	1,740	85	47	21,800	7.8
Feb. 1-20--------------	.76	4.3		529	205	5,700		139	1,470	9,160		--		17,100	23.3	35.1	2,160	2,050	85	53	25,400	7.6
Feb. 21-28-------------	a.04	3.5		648	255	7,230		132	1,840	11,600		--		21,600	29.4	2.33	2,670	2,560	85	61	31,400	7.9
Mar. 1-7---------------	a.01	4.4		703	274	7,650		134	1,980	12,300		--		23,000	31.3	.62	2,880	2,770	85	62	33,200	7.9
Mar. 8-19--------------	a.01	3.9		735	288	8,150		127	2,070	13,100		--		24,400	33.2	.66	3,020	2,910	85	64	34,800	7.7
Apr. 12----------------	413	10		238	75	1,710		115	553	2,800		--		5,440	7.40	6,070	902	808	80	25	9,220	8.0
Apr. 13, 16------------	2,206	6.8		60	15	269		132	88	420		4.8		959	1.30	5,710	211	103	73	8.1	1,710	7.7
Apr. 14-15-------------	1,617	7.0		36	4.8	88		129	33	112		2.2		b346	.47	1,510	110	4	64	3.6	609	7.6
Apr. 17-20-------------	28.2	8.7		133	37	933		121	256	1,520		3.0		2,950	4.01	225	484	385	81	18	5,230	7.5
Apr. 21-26-------------	10.6	6.2		164	52	1,320		108	348	2,160		--		4,100	5.58	117	623	534	82	23	7,130	7.4
Apr. 27-30-------------	62.2	6.4		97	22	551		103	167	900		2.8		1,800	2.45	302	332	248	78	13	3,320	7.3
May 1-10---------------	2.24	3.4		170	56	1,420		111	355	2,330		--		4,390	5.97	26.6	654	564	83	24	7,640	7.5
May 11, 16, 21-23, 25-27, 31----------	480	10		84	24	490		120	153	790		1.8		1,610	2.19	2,090	308	210	78	12	2,910	7.8
May 12-13, 15, 19------	1,338	9.6		36	5.5	62		119	28	83		2.8		289	.39	1,040	112	14	54	2.5	528	7.5
May 14, 17-18----------	218	11		54	12	179		119	77	278		4.0		705	.96	415	184	86	68	5.7	1,260	7.8
May 20, 24, 28-30------	21.8	8.8		116	32	818		123	226	1,320		1.5		2,580	3.51	152	421	320	81	17	4,610	8.0
June 1-12--------------	a.80	7.8		160	50	1,340		119	365	2,160		--		4,140	5.63	8.94	604	507	83	24	7,250	7.6
June 29-30-------------	162	15		268	80	2,060		118	636	3,350		5.0		6,470	8.80	2,830	998	901	82	28	10,500	7.9
July 1-----------------	225	14		38	8.1	129		116	37	193		4.5		532	.72	323	128	34	69	4.9	969	8.0
July 2-5---------------	25.6	13		76	19	484		120	142	760		1.0		1,550	2.11	107	268	169	80	13	2,940	7.6
July 6-10--------------	1.66	10		127	42	1,200		88	311	1,920		3.0		3,660	4.98	16.4	490	418	84	24	6,500	7.0
July 11----------------	a0	15		136	52	1,450		68	368	2,320		--		4,370	5.94	--	554	498	85	27	7,530	7.7
Weighted average-------	75.8	8.5		58	14	277		124	90	430		3.1		954	1.30	195	202	100	75	8.5	1,670	--

a Less than 0.05 second-foot flow Oct. 1-2, Feb 25-28, Mar. 1-6, 11-31, Apr. 1-10, June 13-28, July 11 to Sept. 30.
b Sum of determined constituents.

COLORADO RIVER NEAR SAN SABA, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 190, 5.2 miles downstream from San Saba River, 9.2 miles east of San Saba, San Saba County, and at mile 474.
DRAINAGE AREA.--30,600 square miles, approximately, of which 11,900 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: September 1947 to September 1954.
Water temperatures: September 1947 to September 1954.
Sediment records: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 633 ppm Mar. 27-31; minimum, 190 ppm Oct. 5-12.
Hardness: Maximum, 274 ppm Feb. 20-28; minimum, 118 ppm Oct. 5-12.
Specific conductance: Maximum daily, 1,230 micromhos Oct. 31; minimum daily, 225 micromhos Oct. 6.
Water temperatures: Maximum observed, 92°F July 12; minimum observed, 38°F Jan. 11, 22.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 1,530 ppm Oct. 15-19, 1947; minimum, 127 ppm Sept. 11-13, 1952.
Hardness: Maximum, 522 ppm Oct. 15-19, 1947; minimum, 71 ppm June 25-30, 1949.
Specific conductance: Maximum daily, 3,420 micromhos Sept. 20, 1947; minimum daily, 161 micromhos Sept. 11, 1952.
Water temperatures: Maximum observed, 93°F June 14, 1953; minimum observed, freezing point Jan. 29, 1948, Jan. 30, 1951.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-4, 13-15, 1953--	946	16		49	14	43		181	35	61		2.2		314	0.43	802	180	32	34	1.4	533	8.2
Oct. 5-12----------	7,264	12		38	5.6	20		127	17	25		4.2		190	.26	3,730	118	14	27	.8	317	7.9
Oct. 16, 21-26, 29-30--	472	13		52	11	74		169	41	108		2.5		394	.54	502	174	36	48	2.4	685	8.0
Oct. 17-20, 27-28, 31--	894	12		59	10	131		155	64	197		2.5		564	.77	1,360	188	61	60	4.2	989	8.0
Nov. 1, 7-10----------	334	11		49	11	107		147	50	160		2.8		474	.64	427	168	47	58	3.6	840	7.8
Nov. 2-6, 11-20--------	221	12		50	13	68		177	41	97		2.8		376	.51	224	178	34	45	2.2	660	8.0
Nov. 21-30----------	86.4	13		59	21	54		249	32	79		2.2		385	.52	89.8	234	30	33	1.5	689	8.2
Dec. 1-10----------	82.4	14		61	22	58		270	32	80		1.8		412	.56	91.7	242	22	34	1.6	702	8.2
Dec. 11-20----------	68.4	12		63	25	53		289	29	76		2.0		413	.56	76.3	260	23	31	1.4	709	8.1
Dec. 21-31----------	66.7	10		62	27	56		291	28	84		2.2		425	.58	76.5	266	27	32	1.5	732	8.1
Jan. 1-10, 1954--------	68.0	16		61	27	62		294	28	89		2.5		a430	.58	78.9	263	22	34	1.7	793	8.2
Jan. 11-20----------	70.2	17		62	27	65		300	29	91		2.2		a441	.60	83.6	266	20	35	1.7	804	8.2
Jan. 21-31----------	74.8	18		64	26	66		293	34	94		2.0		a448	.61	90.5	266	26	35	1.8	809	8.1
Feb. 1-10----------	59.9	14		62	27	60		296	30	85		1.8		437	.59	70.7	266	23	33	1.6	758	8.0
Feb. 11-19----------	46.4	14		62	27	66		292	29	98		1.8		451	.61	56.5	266	26	35	1.8	795	8.0
Feb. 20-28----------	37.9	14		62	29	60		309	26	87		1.8		441	.60	45.1	274	20	32	1.6	779	8.0
Mar. 1-12----------	45.1	13		50	31	62		268	29	96		2.2		426	.58	51.9	252	33	35	1.7	744	8.2
Mar. 13-26----------	40.7	16		51	30	67		274	27	101		1.5		430	.58	47.3	250	26	37	1.8	760	8.2
Mar. 27-31----------	180	12		74	21	132		258	57	202		2.0		633	.86	308	271	60	51	3.5	1,130	8.2
Apr. 1-9, 17-18--------	1,294	13		60	22	108		244	55	154		1.2		a533	.72	1,860	240	40	50	3.0	945	8.1
Apr. 10-13, 19-28------	719	13		47	12	67		181	36	88		2.8		a355	.48	689	167	18	47	2.3	631	7.9
Apr. 14-16, 29-30------	10,820	12		42	5.8	35		137	28	43		2.2		238	.32	6,950	129	16	37	1.3	415	7.7
May 1, 3-10----------	1,441	13		39	8.2	26		147	19	32		3.8		226	.31	879	131	11	30	1.0	375	7.7
May 2, 14-20----------	5,391	16		45	6.1	58		141	36	76		4.0		314	.43	4,570	137	22	48	2.1	564	7.9
May 11-13, 21-31-------	5,839	17		40	5.2	28		142	20	30		3.5		a214	.29	3,370	121	5	33	1.1	372	7.8
June 1-10, 25-26-------	1,037	16		58	13	76		155	70	114		2.0		464	.63	1,300	198	71	45	2.3	767	7.9
June 11-20----------	421	14		42	8.3	37		127	39	52		2.8		282	.38	321	139	35	37	1.4	456	7.7
June 21-24, 27-30------	179	15		48	9.4	38		168	30	50		1.2		295	.40	143	158	21	34	1.3	482	7.9
July 1-10----------	577	14		48	9.2	36		169	30	45		3.0		294	.40	458	158	19	33	1.2	480	7.9
July 11-20----------	53.7	13		34	11	30		139	24	39		1.8		228	.31	33.1	130	16	33	1.1	402	8.0
July 21-31----------	5.22	15		39	12	31		152	26	43		1.2		251	.34	3.54	147	22	31	1.1	432	7.9
Aug. 1-10----------	64.2	12		47	12	40		180	29	53		1.0		292	.40	50.6	167	19	34	1.3	506	7.9
Aug. 11-20----------	3.62	14		51	14	47		190	32	68		1.0		332	.45	3.24	184	29	35	1.5	581	7.9
Aug. 21-31----------	.08	13		48	15	50		188	35	70		1.0		339	.46	.07	182	28	37	1.6	590	7.7
Sept. 1-2, 9-17--------	12.3	13		52	17	75		172	54	116		1.2		428	.58	14.2	200	58	45	2.3	754	8.1
Sept. 3-8, 18-20-------	22.5	13		59	20	91		181	71	144		1.0		508	.69	30.9	229	80	46	2.6	893	8.2
Sept. 21-30----------	2.04	12		56	23	105		187	67	169		1.0		538	.73	2.96	234	81	49	3.0	962	8.1
Weighted average-----	906	14		44	8.0	43		151	29	56		3.2		278	0.38	680	143	20	40	1.6	481	--

a Sum of determined constituents.

COLORADO RIVER AT AUSTIN, TEX.

LOCATION.--At raw-water intake of Austin City Water Plant, 4½ miles upstream from gaging station which is at Montopolis bridge on U. S. Highway 183, at southeast edge of Austin, Travis County, 2.8 miles upstream from Walnut Creek, 3.8 miles downstream from Waller Creek, 5 miles downstream from Barton Creek and at mile 290.
DRAINAGE AREA.--38,160 square miles, approximately, of which 11,900 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1954.
Water temperatures: October 1947 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 272 ppm Jan. 1-31; minimum, 224 ppm May 1-31.
Hardness: Maximum, 214 ppm Jan. 1-31; minimum, 146 ppm May 1-31, June 1-30.
Specific conductance: Maximum daily, 520 micromhos Jan. 27; minimum daily, 243 micromhos Dec. 2.
Water temperatures: Maximum observed, 80°F July 22, Sept. 2; minimum observed, 52°F Dec. 24, Jan. 22.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 340 ppm Nov. 1-30, 1951; minimum, 214 ppm July 1-31, 1953.
Hardness: Maximum, 214 ppm Jan. 1-31, 1954; minimum, 144 ppm June 1-30, 1953.
Specific conductance: Maximum daily, 591 micromhos July 1, 1948; minimum daily, 243 micromhos Dec. 2, 1953.
Water temperatures: Maximum observed 87°F on several days during summer months; minimum observed, 43°F Jan. 28, 1948, Feb. 4, 1949.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1953	334	12		47	12	17		182	16	25	0.5	2.2		228	0.31	206	167	18	18	0.6	388	8.2
Nov. 1-30	271	14		53	14	15		203	15	26	.3	2.8		a240	.33	176	190	23	15	.5	414	8.0
Dec. 1-31	505	12		56	14	17		218	17	24	.2	3.8		259	.35	353	197	18	16	.5	448	8.2
Jan. 1-31, 1954	487	12		58	17	17		230	20	28	--	3.5		272	.37	358	214	26	15	.5	477	8.2
Feb. 1-28	223	11		46	17	21		199	23	29	.2	3.5		256	.35	154	185	22	20	.7	452	8.2
Mar. 1-31	405	8.8		49	14	21		197	21	28	.2	1.8		248	.34	271	180	18	20	.7	440	8.2
Apr. 1-30	954	9.6		45	12	22		182	18	28	.5	1.5		227	.31	585	162	13	23	.7	400	7.5
May 1-31	1,952	16		42	10	25		174	16	27	.4	2.0		a224	.30	1,180	146	4	27	.9	389	8.2
June 1-30	1,963	13		42	10	24		167	17	28	.3	2.8		231	.31	1,220	146	9	26	.8	389	7.8
July 1-31	2,138	11		43	13	20		177	17	28	.2	1.0		234	.32	1,350	161	16	21	.7	407	8.0
Aug. 1-31	1,527	8.6		46	12	22		181	17	32	.3	1.2		234	.32	965	164	16	23	.8	410	7.6
Sept. 1-30	512	9.6		43	13	22		177	18	32	.2	.8		233	.32	322	161	16	23	.8	418	7.9
Weighted average	945	12		45	12	22		182	17	28	0.3	1.9		235	0.32	600	162	13	23	0.8	408	--

a Sum of determined constituents.

COLORADO RIVER AT WHARTON, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Wharton, Wharton County, 1,000 feet downstream from Texas & New Orleans Railroad bridge, 12 miles downstream from Jones Creek and at mile 67.
DRAINAGE AREA.--41,150 square miles, approximately, of which 11,900 square miles is probably non-contributing.
RECORDS AVAILABLE.--Chemical analyses: April 1944 to September 1954.
Water temperatures: October 1945 to September 1948, March 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 306 ppm Feb. 1-28; minimum, 167 ppm Oct. 27-31, Nov. 1-6.
Hardness: Maximum, 203 ppm Feb. 1-28; minimum, 110 ppm Oct. 27-31, Nov. 1-6.
Specific conductance: Maximum daily, 569 micromhos Mar. 15; minimum daily, 179 micromhos Oct. 30.
Water temperatures: Maximum observed, 95°F July 26; minimum observed, 42°F Dec. 26.
EXTREMES, 1944-54.--Dissolved solids: Maximum, 386 ppm Apr. 1-10, 1948; minimum, 144 ppm Feb. 24-28, 1949.
Hardness: Maximum, 231 ppm Feb. 1-10, 1947; minimum, 87 ppm Feb. 24-28, 1949.
Specific conductance: Maximum daily, 721 micromhos Oct. 3, 1952; minimum daily, 179 micromhos Oct. 30, 1953.
Water temperatures (1945-48, 1950-54): Maximum observed, 95°F July 26, 1954; minimum observed, 42°F Dec. 26, 1953.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-26, 1953	674	22		50	13	28	4.1	a210	21	36	0.3	1.2	0.09	b279	0.38	508	178	6	25	0.9	470	8.4
Oct. 27-31, Nov. 1-6	3,050	17		36	5.0	10	3.6	118	21	12	.4	2.5	.09	167	.23	1,380	110	14	16	.4	270	8.0
Nov. 7-30	672	14		50	10	21	3.9	180	25	28	.4	1.5	.08	b243	.33	441	166	18	21	.7	410	8.1
Dec. 1-4, 13-31	1,051	17		56	11	20	3.6	193	30	27	.3	3.5	.12	275	.37	780	184	26	19	.6	437	7.7
Dec. 5-12	3,232	14		44	5.4	11	3.8	130	35	10	.5	4.2	.07	201	.27	1,750	132	26	15	.4	318	7.7
Jan. 1-31, 1954	784	13		50	13	24	3.6	183	30	34	.3	1.8	.06	270	.37	572	178	28	22	.8	454	7.9
Feb. 1-28	390	9.0		55	16	30	3.6	216	34	41	.3	1.0	.16	306	.42	322	203	26	24	.9	532	8.0
Mar. 1-31	357	12		44	17	34	--	193	35	43	.3	2.2	.16	285	.39	275	180	22	29	1.1	504	8.2
Apr. 1-30	749	14		44	12	24	3.5	182	24	34	.3	1.8	.12	250	.34	506	160	10	24	.8	435	8.2
May 1-31	1,287	20		42	9.6	20	5.2	166	19	28	.3	2.5	.14	230	.31	799	144	8	22	.7	391	7.9
June 1-30	902	13		43	12	20	3.7	175	19	30	.3	2.2	.18	234	.32	570	157	14	21	.7	404	8.1
July 1-31	876	11		44	12	20	3.8	176	18	31	.3	1.2	.12	231	.31	546	160	16	21	.7	401	8.2
Aug. 1-31	910	9.6		44	12	24	4.2	172	20	39	.3	1.0	.13	b239	.33	587	160	18	24	.8	430	8.2
Sept. 1-30	436	14		46	13	25	4.4	190	19	36	.2	1.0	.08	b252	.34	297	168	13	24	.8	451	7.9
Weighted average	880	15		45	11	21	4.0	171	24	29	0.3	2.1	0.11	239	0.33	568	158	18	22	0.7	406	--

a Includes equivalent of 4 ppm carbonate (CO_3).
b Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
LAKE J. B. THOMAS NEAR IRA																						
Nov. 11, 1953---------		8.4	0.00	16	3.6	46	2.2	103	40	18	0.5	1.0	0.22	203	0.28		55	0	63	2.7	313	7.2
July 21, 1954---------		8.2	.01	17	4.6	41	1.3	104	37	18	.7	3.0	.02	189	.26		61	0	59	2.3	324	7.9
OAK CREEK RESERVOIR NEAR BLACKWELL																						
Oct. 16, 1953---------		3.6	.03	34	4.6	1.7	4.5	125	8.4	1.5	.1	1.0	.06	127	.17		104	1	3	.1	222	7.8
SAN ANGELO RESERVOIR NEAR SAN ANGELO																						
Oct. 16, 1953---------		7.8	.03	36	5.5	4.0	4.3	139	4.0	4.2	.3	1.0	.02	138	.19		112	0	7	.2	240	7.9
HORDES CREEK RESERVOIR NEAR COLEMAN																						
Jan. 14, 1954---------		6.4	.06	38	5.8	3.4	5.4	146	3.4	3.8	.3	.5	.08	146	.20		119	0	6	.1	242	8.1

GUADALUPE RIVER BASIN

GUADALUPE RIVER AT VICTORIA, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Victoria, Victoria County, 1,300 feet upstream from Texas & New Orleans Railroad bridge, 10 miles upstream from Coleto Creek, and at mile 51.
DRAINAGE AREA.--5,311 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1948 to September 1954.
Water temperatures: November 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 650 ppm Sept. 13-20; minimum, 168 ppm Oct. 26-31, Nov. 1-2.
Hardness: Maximum, 278 ppm Apr. 25-29; minimum, 104 ppm Oct. 26-31, Nov. 1-2.
Specific conductance: Maximum daily, 1,260 micromhos Sept. 15; minimum daily, 224 micromhos Oct. 27.
Water temperatures: Maximum observed, 87°F Aug. 12, 14-15; minimum observed, 44°F Dec. 24.
EXTREMES, 1945-46, 1948-54.--Dissolved solids: Maximum, 1,040 ppm Jan. 11-17, 1946; minimum, 168 ppm Oct. 26-31, Nov. 1-2, 1953.
Hardness: Maximum, 428 ppm Jan. 11-17, 1946; minimum, 104 ppm Oct. 26-31, Nov. 1-2, 1953.
Specific conductance: Maximum daily, 1,950 micromhos Jan. 11-17, 1946; minimum daily, 201 micromhos Sept. 1, 1953.
Water temperatures (1950-54): Maximum observed, 90°F Aug. 4, 27, 1952; minimum observed, 40°F Feb. 1-2, 1951.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-11, 1953	432	21		47	15	35	3.4	194	24	53	0.3	3.2	0.30	308	0.42	359	179	20	29	1.1	514	8.1
Oct. 12-25	775	18		46	16	34	2.9	195	25	52	.3	2.2	.21	304	.41	636	181	21	29	1.1	512	7.9
Oct. 26-31, Nov. 1-2	4,847	14		31	6.3	13	4.0	110	13	19	.3	3.5	.18	168	.23	2,200	104	14	21	.6	267	7.7
Nov. 3-9	902	16		46	8.8	26	4.3	158	20	42	.3	2.8	.25	255	.35	621	151	22	27	.9	421	7.9
Nov. 10-20	633	20		63	16	32	3.2	236	28	50	.2	3.8	.47	350	.48	598	223	30	23	.9	570	8.2
Nov. 21-30	533	20		52	18	34	2.5	214	30	54	.2	3.2	.26	329	.45	473	204	28	26	1.0	562	8.2
Dec. 1-7	1,508	16		66	16	36	2.9	244	29	54	.3	3.8	.34	351	.48	1,430	230	30	25	1.0	588	8.1
Dec. 8-16	784	15		56	12	25	3.5	204	27	34	.3	3.5	.29	286	.39	605	189	22	22	.8	471	8.0
Dec. 17-31	656	17		74	18	36	2.6	278	30	53	.2	4.5	.33	386	.52	684	258	30	23	1.0	625	8.2
Jan. 1-4, 10, 15, 22-24 30, 1954	574	22		39	19	52	3.1	158	35	85	.3	4.0	.16	344	.47	533	176	46	39	1.7	592	8.0
Jan. 5-6, 21, 25-29, 31	583	19		32	19	42	2.8	147	32	67	.3	4.0	.09	a290	.39	456	158	38	36	1.5	510	8.0
Jan. 7-9, 11-14, 16-20	587	21		32	17	36	2.7	148	28	55	.3	3.5	.08	a269	.37	426	150	28	34	1.3	464	8.1
Feb. 1-10	527	18		34	19	43	2.8	158	33	66	.3	3.5	.09	a298	.41	424	163	34	36	1.5	527	8.1
Feb. 11-19	508	16		36	20	42	2.8	162	33	66	.3	2.8	.11	a299	.41	410	172	40	34	1.4	534	8.0
Feb. 20-28	477	16		42	19	44	3.2	173	32	72	.3	2.5	.14	339	.46	437	183	41	34	1.4	576	7.5
Mar. 1-10	437	18		46	20	48	2.9	195	35	75	.3	2.5	.17	a344	.47	406	197	37	34	1.5	609	8.1
Mar. 11-20, 22, 24	416	15		44	20	50	--	193	35	74	.3	2.2	.19	340	.46	382	192	34	36	1.6	604	8.0
Mar. 21, 23, 25-31	380	16		52	21	57	--	208	38	92	.3	3.0	.23	391	.53	401	216	46	36	1.7	678	8.1
Apr. 1-13	571	19		54	20	59	--	212	37	94	.3	3.5	.18	404	.55	623	216	42	37	1.8	709	8.2
Apr. 14-19	514	18		44	9.2	29	--	156	28	38	.3	3.5	.18	269	.37	373	148	20	30	1.0	434	8.0
Apr. 20-24, 30	389	23		60	17	50	--	224	33	80	.3	2.5	.21	a376	.51	395	220	36	33	1.5	661	8.2
Apr. 25-29	332	19		70	2.5	97	--	218	45	183	.2	1.2	.28	582	.79	522	278	99	43	2.5	994	8.1
May 1-10	557	29		42	17	48	--	181	31	74	.4	2.5	.23	a333	.45	501	175	26	37	1.6	583	8.2
May 11-15, 29-31	1,164	30		48	14	41	--	187	29	63	.4	4.5	.22	328	.45	1,030	178	24	33	1.3	554	8.2
May 16-28	530	23		39	6.7	29	4.4	138	17	40	.5	3.5	.20	236	.32	338	125	12	33	1.1	389	8.2
June 1-10	323	21		56	19	52	--	220	34	85	.3	1.8	.36	388	.53	338	218	37	34	1.5	663	8.1
June 11-20	199	21		49	18	51	--	201	34	80	.3	1.8	.26	360	.49	193	196	32	36	1.6	622	8.0
June 21-30	217	18		52	19	59	--	206	36	95	.4	2.0	.26	390	.53	229	208	38	38	1.8	680	8.0
July 1-10	181	19		40	19	61	3.2	181	35	94	.5	.8	.27	a362	.49	177	178	30	42	2.0	656	8.2
July 11-20	160	18		47	19	68	3.4	193	37	112	.4	.8	.29	a401	.55	173	196	38	43	2.1	725	8.1
July 21-31	103	19		52	22	112	4.7	176	46	200	.4	.8	.26	553	.75	154	220	76	52	3.3	997	7.7
Aug. 1-10	123	22		51	19	74	3.8	214	36	116	.5	.8	.28	a428	.58	142	205	30	43	2.2	761	8.0
Aug. 11-20	99.8	22		52	19	70	3.5	221	35	108	.4	.8	.25	420	.57	113	208	26	42	2.1	743	8.2
Aug. 21-31	102	21		54	20	80	3.7	215	42	128	.4	.5	.30	a456	.62	126	216	40	44	2.4	807	8.1
Sept. 1-12	111	26		50	21	81	3.9	209	39	124	.3	.5	.12	456	.62	137	212	40	45	2.4	805	8.2
Sept. 13-20	101	24		58	24	133	4.8	207	44	225	.3	.8	.19	650	.88	177	243	74	54	3.7	1,130	8.2
Sept. 21-30	108	23		50	18	71	3.8	224	33	98	.2	.5	.05	408	.55	119	199	16	43	2.2	728	8.1
Weighted average	548	19		46	14	37	3.4	179	27	58	0.3	3.2	0.22	304	0.41	450	172	26	31	1.2	516	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN GUADALUPE RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
VERDE CREEK AT CAMP VERDE																						
May 14, 1954----------		12		69	19	8.6		289	9.2	16		0.0		276	0.38		250	13	7	0.2	498	7.9
HELOTES CREEK 1½ MILES NORTH OF HELOTES																						
Apr. 8, 1954----------		13		68	19	13		292	11	18		0.0		294	.40		248	8	10	.4	501	7.8
MEDINA LAKE NEAR SAN ANTONIO																						
Apr. 8, 1954----------		7.0		66	15	10		209	57	12		2.0		303	.41		226	55	9	.3	462	8.1

NUECES RIVER BASIN

NUECES RIVER NEAR MATHIS, TEX.

LOCATION.--At intake tower at Lake Corpus Christi, 0.8 mile upstream from gaging station at bridge on U. S. Highway 59, 200 feet downstream from Texas & New Orleans Railroad bridge and 4 miles southwest of Mathis, San Patricio County.
DRAINAGE AREA.--16,660 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1954.
Water temperatures: October 1947 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 478 ppm May 1-31; minimum, 211 ppm Nov. 1-30.
Hardness: Maximum, 172 ppm Apr. 1-30; minimum, 108 ppm Nov. 1-30.
Specific conductance: Maximum daily, 879 micromhos May 19; minimum daily, 315 micromhos Nov. 7.
Water temperatures: Maximum observed, 85°F July 21, 30; minimum observed, 46°F Dec. 14, 23.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 548 ppm June 1-30, 1948; minimum, 175 ppm Apr. 27-30, 1949.
Hardness: Maximum, 201 ppm May 1-24, 1951; minimum, 85 ppm Apr. 27-30, 1949.
Specific conductance: Maximum daily, 1,040 micromhos July 1, 1948; minimum daily, 233 micromhos July 30, 1949.
Water temperatures: Maximum observed 94°F July 27, 1948; minimum observed, 38°F Jan. 31, 1948.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1953	1,068	31		45	3.7	32	6.1	170	30	24	0.5	2.5	0.18	a259	0.35	747	128	0	34	1.2	401	8.1
Nov. 1-30	687	23		38	3.1	27	5.1	143	25	18	.5	1.0	.11	a211	.29	391	108	0	34	1.1	335	8.0
Dec. 1-31	44.1	19		44	4.4	26	5.2	164	26	19	.4	1.0	.23	242	.33	29	128	0	30	1.0	368	8.0
Jan. 1-31, 1954	44.4	19		47	4.5	27	5.5	176	25	19	.4	1.2	.18	247	.34	30	136	0	29	1.0	395	8.1
Feb. 1-28	58.8	19		51	4.7	32	6.2	189	28	25	.4	1.2	.19	274	.37	44	146	0	31	1.1	437	7.8
Mar. 1-31	60.4	19		55	4.6	42	--	211	30	32	.4	1.8	.21	298	.41	49	156	0	37	1.5	489	8.2
Apr. 1-30	52.5	36		60	5.4	73	6.7	b245	40	68	.4	1.2	.25	a411	.56	58	172	0	47	2.4	670	8.4
May 1-31	60.4	32		59	5.2	100	--	c254	50	96	.5	3.5	.47	478	.65	78	168	0	56	3.4	801	8.5
June 1-10	995	29		49	5.7	89	--	220	50	82	.5	2.5	.42	428	.58	1,150	146	0	57	3.2	696	8.2
June 11-30	896	25		48	4.9	48	6.4	195	32	42	.5	2.5	.34	314	.43	760	140	0	41	1.8	514	8.0
July 1-31	2,362	24		46	4.4	32	6.9	176	25	26	.5	1.8	.15	263	.36	1,680	133	0	33	1.2	414	8.0
Aug. 1-31	86.6	23		55	4.3	28	7.3	206	23	23	.5	2.8	.18	276	.38	65	154	0	27	1.0	444	8.1
Sept. 1-30	77.8	24		53	4.6	33	7.8	205	23	28	.2	2.2	.18	282	.38	59	151	0	31	1.2	465	8.1
Weighted average	465	26		46	4.3	38	6.4	178	29	31	0.4	2.0	0.20	275	0.37	345	132	0	37	1.4	437	--

a Sum of determined constituents
b Includes equivalent of 7 ppm carbonate (CO_3).
c Includes equivalent of 8 ppm carbonate (CO_3).

PECOS RIVER BELOW RED BLUFF DAM NEAR ORLA, TEX.

LOCATION.--Just below dam, 3 miles upstream from Salt (Screwbean) Draw, 5 miles northwest of Orla, Reeves County, and 14 miles upstream from gaging station near Orla.
DRAINAGE AREA.--21,300 square miles, approximately (contributing area), above gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1954.
Water temperatures: March 1953 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 15,200 ppm Oct. 1-16; minimum, 4,280 ppm Sept. 1-30.
Hardness: Maximum, 3,430 ppm Oct. 1-16; minimum, 1,260 ppm Sept. 1-30.
Specific conductance: Maximum daily, 23,900 micromhos Oct. 1; minimum daily, 5,010 micromhos Sept. 13.
Water temperatures: Maximum observed, 80°F on several days during July and August; minimum observed, 40°F on several days during December.
EXTREMES, 1937-54.--Dissolved solids: Maximum, 15,600 ppm Sept. 17-30, 1953; minimum, 1,090 ppm June 1-2, 1948.
Hardness: Maximum, 3,430 ppm July 1-31, Oct. 1-16, 1953; minimum, 602 ppm June 1-2, 1948.
Specific conductance: Maximum daily, 24,200 micromhos Sept. 28, 30, 1953; minimum daily, 1,610 micromhos June 2, 1948.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for gaging station near Orla for water year October 1953 to September 1954 given in Water-Supply Paper 1342. Mean discharge values reported are adjusted to reflect inflow from Salt (Screwbean) Draw which enters Pecos River between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (Sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-16, 1953	12.1	15		785	359	4,290		110	2,980	6,790				15,200	20.7	497	3,430	3.250	73	32	21,900	7.4
Oct. 17-31	13.7	13		737	308	2,930		97	2,740	4,640				11,500	15.6	425	3,110	2,940	67	23	16,400	7.1
Nov. 1-30	14.4	11		685	278	2,510		88	2,540	3,960				10,000	13.6	389	2,850	2,780	66	20	14,500	7.1
Dec. 1-31	14.1	11		568	234	2,050		82	2,110	3,240				8,250	11.2	314	2,380	2,310	65	18	12,200	7.0
Jan. 1-31, 1954	10.2	10		540	223	2,340		120	2,000	3,660				8,830	12.0	243	2,260	2,170	69	21	12,800	7.9
Feb. 1-28	23.5	8.8		538	218	2,240		106	2,000	3,510				8,570	11.7	544	2,240	2,150	69	21	12,500	7.6
Mar. 1-31	230	7.8		552	225	2,330		107	2,060	3,640				8,870	12.1	5,510	2,300	2,210	69	21	12,800	7.7
Apr. 1-30	16.9	9.6		566	228	2,230		112	2,070	3,510				8,670	11.8	396	2,350	2,260	67	20	12,800	7.6
May 1-19, 28-31	10.6	11		570	226	2,180		120	2,060	3,440				8,550	11.6	245	2,350	2,250	67	20	12,700	7.9
May 20-27	307	8.2		541	181	1,740		104	1,860	2,740				7,120	9.68	5,900	2,090	2,010	64	17	10,500	7.5
June 1-7	25.8	17		544	214	2,080		140	2,000	3,240				8,160	11.1	568	2,240	2,120	67	19	12,100	7.7
June 8-30	180	11		492	155	1,530		106	1,670	2,380				6,290	8.55	3,060	1,860	1,780	64	15	9,300	7.8
July 1-31	209	12		466	139	1,380		103	1,600	2,120				5,770	7.85	3,260	1,730	1,650	63	14	8,530	7.7
Aug. 1-31	143	12		508	138	1,430		107	1,620	2,250				6,010	8.17	2,320	1,840	1,750	63	15	8,900	7.4
Sept. 1-30	148	14		356	91	1,040		106	1,100	1,620		8.0		4,280	5.82	1,710	1,260	1,180	64	13	6,620	7.4
Weighted average	88.4	11		498	167	1,700		106	1,720	2,650				6,790	9.25	1,620	1,930	1,840	66	17	10,000	--

PECOS RIVER BELOW GRANDFALLS, TEX.

LOCATION.--At gaging station at bridge on State Farm-to-Market Road 11 between Grandfalls and Imperial, 7.1 miles southeast of Grandfalls, Ward County, and 10 miles downstream from Chacatori Draw.
DRAINAGE AREA.--27,820 square miles, approximately (contributing area).
RECORDS AVAILABLE.--Chemical analyses: April 1939 to June 1942, October 1946 to September 1954.
EXTREMES, 1953-54.--Hardness: Maximum, 3,520 ppm Sept. 1-30; minimum, 246 ppm June 14.
Specific conductance: Maximum daily, 20,100 micromhos May 21-22; minimum daily, 904 micromhos June 14.
EXTREMES, 1939-42, 1946-53.--Hardness: Maximum, 4,460 ppm Mar. 1-31, 1953; minimum, 246 ppm June 14, 1954.
Specific conductance: Maximum daily, 35,700 micromhos Feb. 9-10, 15, 19-20, 1953; minimum daily, 904 micromhos June 14, 1954.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1953	9.24	--				2,610		114	2,950	4,340							3,440	3,350	61	19	15,500	7.6
Dec. 1-31	11.3	23				2,620		175	2,890	4,470							3,420	3,280	60	19	15,700	7.7
Jan. 1-31, 1954	11.2	--				2,670		197	2,910	4,380							3,280	3,120	62	20	15,300	7.9
Feb. 1-28	10.6	--				2,700		173	2,950	4,430							3,280	3,140	62	20	16,000	7.9
Mar. 1-31	9.42	--				2,880		148	3,040	4,580							3,420	3,300	58	21	16,400	8.0
Apr. 1-30	19.7	13				2,610		129	2,830	4,220							3,200	3,090	63	20	15,400	7.6
May 1-31	9.11	7.8				2,910		127	3,150	4,770							3,500	3,400	63	21	17,100	8.0
June 1-12	15.9	--				2,620		128	2,930	4,380							3,400	3,300	61	20	15,700	7.7
June 13, 18-19	300	--				809		160	1,010	1,530							1,240	1,110	53	10	6,290	7.8
June 14	360	--				--		130	--	129							246	139	--	--	904	8.1
June 15-17	47.7	--				528		154	639	890							840	714	56	7.9	4,000	7.9
June 20-30	12.3	--				1,600		159	1,880	2,620							2,200	2,070	60	15	10,100	7.9
July 1-3, 16-31	16.5	--				1,810		145	2,300	3,170							2,610	2,490	56	15	12,000	7.8
July 4-8	1.56	--				790		119	984	1,500							1,180	1,080	53	10	6,150	7.8
July 9-15	7.67	--				1,420		128	1,770	2,300							2,000	1,900	59	14	9,170	7.8
Aug. 1-31	7.38	18		764	358	2,450		134	2,800	4,000				10,500	14.3	209	3,380	3,270	61	18	14,700	7.5
Sept. 1-30	7.16	--				2,690		136	3,010	4,350							3,520	3,140	62	20	15,700	7.4
Weighted average	a15.0	--		--	--	2,120		148	2,380	3,290				--	--	--	2,570	2,450	64	18	12,070	--

a Represents 94 percent of runoff for water year October 1953 to September 1954.

PECOS RIVER NEAR GIRVIN, TEX.

LOCATION.--At supplementary gage at bridge on U. S. Highway 67, about half a mile downstream from Panhandle & Santa Fe Railway bridge, 2.1 miles east of Girvin, Pecos County, 6½ miles downstream from Comanche Creek and 7.8 miles downstream from regular gaging station.
DRAINAGE AREA.--29,560 square miles, approximately (contributing area at supplementary gage).
RECORDS AVAILABLE.--Chemical analyses: October 1939 to June 1941, October 1946 to September 1947, October 1953 to September 1954.
Water temperatures: October 1953 to September 1954.
EXTREMES, 1953-54.--Hardness: Maximum, 4,360 ppm Sept. 1-30; minimum, 640 ppm June 16-18.
Specific conductance: Maximum daily, 22,700 micromhos Sept. 26, 30; minimum daily, 2,050 micromhos June 16.
Water temperatures: Maximum observed, 93°F June 1; minimum observed, 41°F Dec. 25.
EXTREMES, 1939-41, 1946-47, 1953-54.--Hardness: Maximum, 4,360 ppm Sept. 1-30, 1954; minimum, 640 ppm June 16-18, 1954.
Specific conductance: Maximum daily, 22,700 micromhos Sept. 26, 30, 1954; minimum daily, 1,480 micromhos May 29, 1941.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1953 to September 1954 given in Water-Supply Paper 1342.

Chemical analyses, in parts per million, water year October 1953 to September 1954

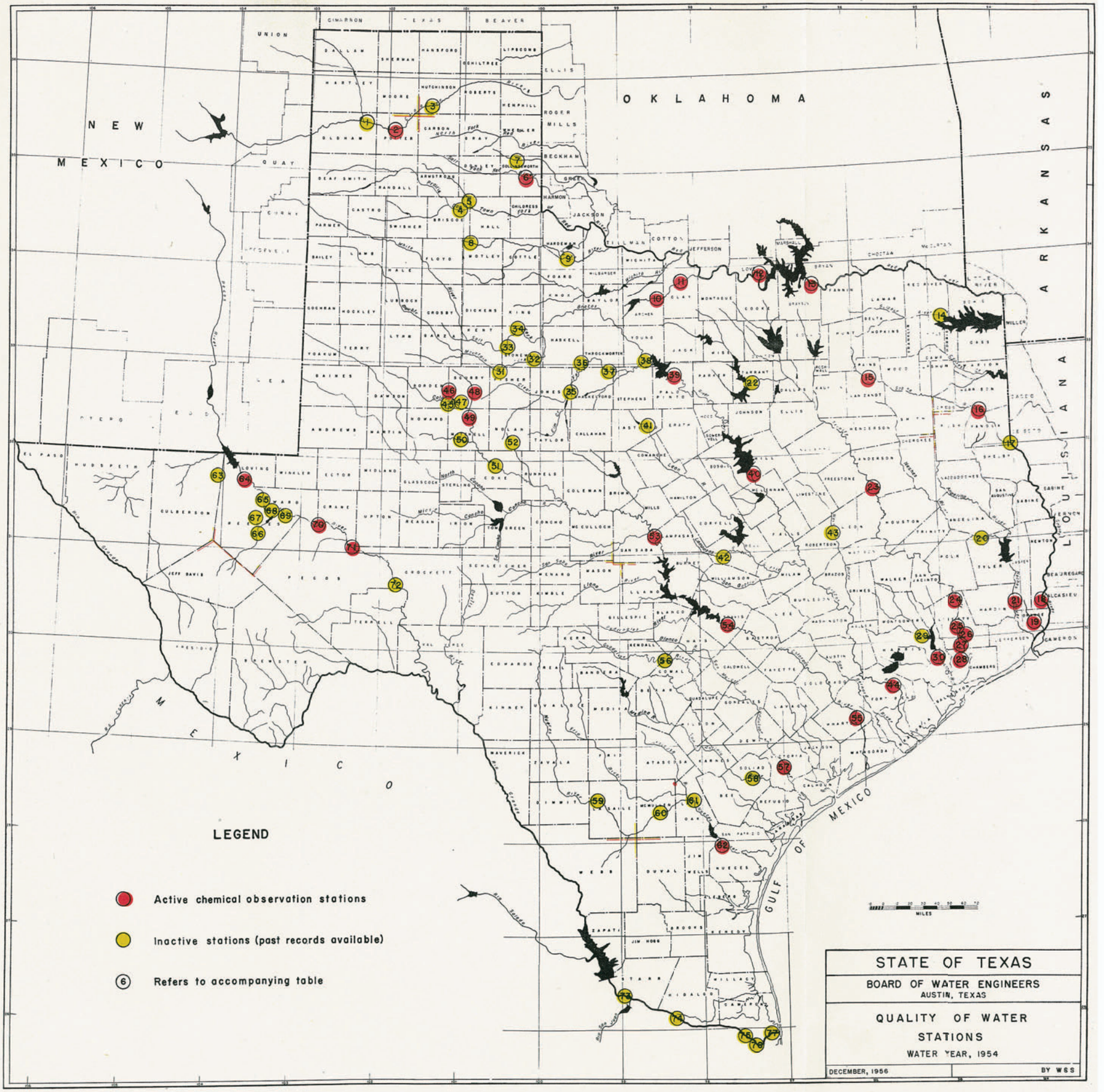
Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1953--------	21.8	--				2,940		52	3,140	4,670							3,420	3,380	65	22	17,000	7.4
Nov. 1-30--------------	18.3	12				3,500		59	3,460	5,460							3,740	3,690	67	25	18,300	7.2
Dec. 1-31--------------	20.7	17				3,720		131	3,670	5,800							4,020	3,910	67	26	19,600	7.7
Jan. 1-31, 1954--------	21.6	--				3,730		169	3,550	5,700							3,770	3,630	68	26	19,200	8.0
Feb. 1-28--------------	22.8	--				3,720		149	3,640	5,700							3,870	3,750	68	26	19,900	7.7
Mar. 1-31--------------	22.4	--				3,830		143	3,810	5,900							4,030	3,910	63	26	20,500	7.9
Apr. 1-10, 13-14, 20-30	26.2	2.9				3,630		96	3,660	5,720							3,880	3,800	66	25	20,000	7.4
Apr. 11-12, 15-19------	35.7	4.4				2,440		114	2,540	3,660							2,590	2,500	67	21	13,700	7.6
May 1-21---------------	18.4	12				3,660		66	3,550	5,510							3,570	3,520	69	27	19,100	7.4
May 22-----------------	31	12				1,400		72	1,450	2,150							1,560	1,510	66	15	8,500	7.7
May 23-31--------------	24.9	13				2,440		63	2,640	3,960							2,690	2,640	63	20	14,600	7.4
June 1-15, 27-30-------	52.9	--				2,670		86	2,600	4,130							2,790	2,720	67	22	14,200	7.6
June 16-18-------------	186	--				310		154	491	570							640	514	51	5.3	2,870	7.9
June 19-22-------------	45	--				1,110		170	1,180	1,700							1,360	1,220	64	13	6,960	8.0
June 23-26-------------	27.8	--				1,780		177	1,790	2,780							2,060	1,920	65	17	10,600	7.9
July 1-31--------------	22.7	--				3,580		91	3,410	5,510							3,610	3,540	68	26	18,900	7.5
Aug. 1-31--------------	12.3	8.6				4,060		61	4,080	6,140							4,120	4,070	68	28	21,100	7.4
Sept. 1-30-------------	6.92	--				4,030		56	4,170	6,240							4,360	4,310	66	27	21,500	6.8
Weighted average-----	23.3	--				3,150		109	3,140	4,880							3,340	3,250	67	24	17,000	--

RIO GRANDE BASIN--Continued

RIO GRANDE BELOW FALCON DAM

Chemical analyses, in parts per million, April 1954

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 18, 1954---------		7.8	0.01	71	17	81	4.8	170	145	95	0.5	1.8	0.07	508	0.69		247	108	41	2.2	825	7.6


NEW MEXICO
OKLAHOMA
ARKANSAS
LOUISIANA
MEXICO
GULF OF MEXICO
LEGEND
Active chemical observation stations
Inactive stations (past records available)
(6) Refers to accompanying table
MILES
STATE OF TEXAS
BOARD OF WATER ENGINEERS
AUSTIN, TEXAS
QUALITY OF WATER STATIONS
WATER YEAR, 1954
DECEMBER, 1956
BY WSS